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VOL. XXVIII. JULY, 1914. No. 7

THE USE OF VACCINES IN CHRONIC EAR INFECTIONS, WITH REPORT OF CASES TREATED.

WILLIAM H. HASKINS, M.D.,
NEW YORK CITY.

Now that the first enthusiasm for the radical mastoid operation—which led to vast numbers being subjected to it—has somewhat subsided, and the profession has awakened to the actual results that have been produced by indiscriminate operative procedures on chronically suppurating ears, many are endeavoring to find some other method of treatment. Any careful and thoughtful reader of medical literature is bound to realize that the operation must be classed as an exceedingly dangerous one because of the subsequent conditions that so frequently arise.

This paper is to tell of the work that is being done in Dr. McKernon's clinic with vaccines in the treatment of chronic suppurations. In no disease is the golden rule more applicable, and it is pretty certain that there are few medical men who would submit either themselves or any member of their families to this dangerous operation until after every other method had failed. We rarely find it necessary to operate upon our private patients, for the simple reason that careful treatment, given personally, seldom fails to relieve. As a matter of fact, I have not performed a radical operation upon a private patient during the past eight years.

With the vast armies that flock to our clinics, we naturally have a far more difficult problem, having in so many instances to deal with filth, poverty, ignorance, and superstition, a combination that makes it almost hopeless to get results by any method, even operations failing. When these clinic patients are fairly intelligent and have risen above filth and actual poverty, they can be taught to understand their conditions and the correct methods of taking care of their ears, and with most gratifying results. There are always some cases, however, that appear to resist every effort, and during the past winter we have been trying autogenous vaccines, following the general plans as laid down by Dr. Nagle in her two papers in which she reported the results of vaccines in seventy cases. She did not give the bacteriology nor describe the actual conditions found in these, so that her work has been questioned by many. This is an injustice to her, when it is realized that the large percentage of the cases were referred to her by such men as Drs. Blake, Cobb, Emerson, Mosher, Walker, and others in Boston, and that the laboratory work was done in the Harvard Medical School, so that all of it was under supervision.

She says: "In all, seventy cases have been reported by me during the past four years. Of these, sixty have remained dry; five failed to continue treatment; two have recurred; and three are still under treatment. It must be remembered that many of these cases were so persistent that the radical operation had been urged. While I recognize that the personal element enters into a report of any new line of treatment, yet I have endeavored to counteract this by having the results supervised."

Her last statement is undoubtedly true, and applies not only to her work but to the different results that will be obtained by any two men working on the same lines in a given series of cases.

In 1908, I reported the results of treatment of chronic suppurations with active cultures of the lactic acid bacillus in a series of cases. The striking results then reported have continued to be obtained in a great many others, and the cultures are generally the first thing ordered by me in all chronic cases. Many associates have told me that they do not get results, so that here again the personal element must play a part, for there is no doubt of the results in my hands, many of the patients having been observed by members of the clinic.

After reading Dr. Nagle's paper, we realized why we had failed to secure satisfactory cultures in our first attempt made about four years ago. We now first cleanse the canal with the vacuum cleaner, sucking out all visible secretions from the attic and Eustachian tube. Then a pledget of cotton saturated with alcohol is packed in the canal and kept there for five minutes. If the perforation is large enough, a sterile platinum loop is introduced into the attic and any secretion is transferred immediately to blood ascitic agar plates. If perforation is small, the Siegel otoscope is used to draw into

sight any secretion there may be, and transfer is then made. A slide is then smeared with secretion obtained on a cotton-covered applicator. All the laboratory work has been done by my associate, Dr. Dwyer. With this technic, we have never failed to secure growth of one or more pathogenic bacteria, from which active autogenous vaccines have been prepared.

Of the patients treated, several had been coming to our clinic for years; others had been treated elsewhere until operation was proposed, while others denied ever having had any treatment. All cases were diagnosed and assigned for treatment by the examining surgeon.

It is unnecessary to describe the actual condition of each individual ear. Suffice it to say that almost every possible pathological change was found in one or other of these cases, including polypi, cholesteatoma, adhesive bands, fistulae, caries, and constrictions. The patients included the young and old of both sexes, and were drawn from all quarters. Dr. Rae had performed a most successful operation on one ear of a patient, and left the other to be treated with vaccines, and he is gratified at the excellent results obtained. Several patients had already been operated upon, but discharge persisted.

Although we have had about 118 cases assigned to us, comparatively few (thirty-three) have been given vaccine, owing to the fact that in the others all discharges were arrested by local treatment before the autogenous vaccines could be prepared, or they had not returned for treatment. Owing to the small number of cases and the short duration of observation, this paper is offered only as a preliminary report, from which no positive conclusions are to be drawn. Before this can be done, it will be necessary to treat several hundred cases and be able to follow them over a period of years, to obtain the ultimate effects.

Since beginning this investigation, we have had 118 cases assigned or transferred to us. Cultures have been taken in only fifty-two of these, and vaccines have been administered in only thirty-three of these. This is explained in three ways: In a large number of cases, the discharge stopped under careful local treatment; some failed to return; and a few objected to the hypodermatic injections. We have included in the list seven cases of mastoiditis which were cured by vaccines about a year ago. Three other mastoid cases have been cured this winter that are not included. Dr. Brown has also reported eight other cases, treated by vaccines for furunculosis, in which chronic middle ear suppurations existing at the same time were cured by the vaccine. One case of ours, still under treatment, had been operated upon twice in another clinic without relief, and was then referred to us, and is now practically well. Two cases were operated upon by another surgeon, but discharge persisted until vaccines were administered, when they promptly dried up.

Of the ten cases of mastoiditis, four were streptococcus infections; five, staphylococcus; and one, bacillus proteus vulgaris. All ten made prompt and complete recoveries.

We have not followed the dosage as used by Dr. Nagle, but have given much larger doses from the beginning, repeating every fourth or fifth day, and stopping as soon as the ears have become dry. The patients were then requested to report every two weeks for observation, so that any recurrence could be promptly noted. As Dr. Nagle states, under vaccine treatment the patient's general health almost invariably improves, this being especially noticeable in children.

In her first paper, Dr. Nagle reported that in a number of cases a stock laboratory staphylococcus vaccine had been given while waiting for the autogenous vaccine, and that marked improvement was frequently noted even when other bacterial infection was present, the resistance for the other bacteria being apparently raised by the stock vaccine. This interesting observation is clearly borne out in the eighth case reported by Dr. Brown, in which there were both furunculosis and middle ear suppuration present. His case, in which a mastoid operation had been performed and vaccines had been used elsewhere, is particularly interesting, illustrating again the importance of the personal element.

Four of our own cases were also double infections of furunculosis and chronic suppurations, and stock staphylococcus vaccines were given, with resulting cure of both conditions.

The first table gives the bacteria that were isolated in each case as the probable cause of infection.

A brief history of each case treated with vaccines and giving present results is presented in Table 2.

It should be noted that every case had received careful treatment for at least ten days before they received their vaccine, but had failed to respond. Those that did respond were not given vaccine.

As shown by the table, thirty-three cases received treatment with vaccines. Of these, two are noted as final "results unknown," owing to the patients failing to return after their ears became dry; eight were improved and are still under observa-

TABLE I.

Number of Cases.	Staphylococcus, Aureus.	Staphylococcus Albus.	Streptococcus, L. Chain.	Streptococcus, Dipl.	Streptococcus Muc. Caps.	Bacillus Pyocyaneus.	Bacillus Pseudo Diphtheria.	Bacillus Proteus Vulgaris.	Bacillus Micosus. Capt.	Bacillus Hay.	No. of Organisms* in Each Case.
1.	..	..	..	1	..	..	1	..	..	..	2
2.	..	1	..	..	..	..	..	..	..	..	1
3.	..	..	..	..	..	1	..	1	..	..	2
4.	1	..	..	..	..	..	..	..	..	..	1
5.	1	..	..	..	..	..	..	..	..	..	1
6.	..	..	..	..	1	1	..	..	..	..	2
7.	..	..	..	..	1	..	..	..	..	..	1
8.	1	..	..	..	..	..	..	..	..	..	1
9.	1	..	..	..	..	..	..	..	..	..	1
10.	..	..	1	..	..	..	1	..	..	..	2
11.	1	..	..	..	1	1	..	..	..	..	3
12.	..	..	..	..	..	..	1	..	..	..	1
13.	..	..	1	..	..	1	..	..	..	..	2
14.	..	..	..	..	..	..	..	1	..	..	1
15.	..	..	1	..	..	..	..	..	..	..	1
16.	..	..	..	..	..	1	1	..	..	..	2
17.	..	..	1	..	..	..	1	..	1	..	3
18.	..	..	..	..	..	1	1	..	1	..	3
19.	..	..	..	..	..	1	..	1	..	..	2
20.	1	..	..	..	..	..	1	..	..	..	2
21.	1	..	..	..	..	..	..	..	..	..	1
22.	..	..	1	..	..	..	1	..	..	..	2
23.	..	..	..	1	..	1	..	..	1	..	3
24.	..	..	1	..	..	1	..	..	..	..	2
25.	1	..	..	..	..	..	..	..	..	..	1
26.	1	..	..	..	..	..	..	..	..	..	1
27.	1	..	..	..	..	..	..	..	..	..	1
28.	..	1	..	..	..	1	..	..	..	..	2
29	..	..	1	..	..	..	1	..	..	..	2
30.	1	..	..	..	..	..	1	..	..	..	2
31.	..	1	..	..	..	..	..	..	..	..	1
32.	..	..	..	..	..	..	1	..	..	..	1
33.	..	..	..	..	1	..	..	..	..	..	1
34.	1	..	..	..	..	..	1	..	..	..	2
35.	1	..	..	..	..	..	1	..	..	..	2
36.	1	..	..	..	..	..	..	..	..	..	1
37.	..	..	1	..	..	..	..	..	..	..	1
38.	..	1	..	..	..	..	..	1	..	..	2
39.	1	..	..	..	1	..	..	..	..	..	2
40.	..	..	..	..	..	1	..	..	..	..	1
41.	1	..	..	..	..	1	1	..	..	..	3
42.	..	..	..	..	..	..	..	1	..	..	1
43.	..	..	..	..	..	..	1	..	..	..	1
44.	..	..	..	..	1	..	..	..	..	..	1
45.	..	..	..	..	1	1	..	..	..	1	3
46.	..	..	..	..	..	..	..	..	..	..	2
47.	..	..	..	..	1	..	..	..	..	..	1
48.	1	..	..	..	..	..	..	..	..	..	1
49.	..	1	..	..	..	1	..	..	..	..	2
50.	..	1	..	..	..	1	..	..	..	..	2
	17	6	8	2	8	15	15	5	3	1	

*1 organism, 24 cases; 2 organisms, 20 cases; 3 organisms, 6 cases.

TABLE II.

No.	Hosp. No.	Bacteria.	Age.	Duration.	Remarks.	Result.
1.	652851.	Bac. Pyo. & Proteus Vulgaris	18 yrs.	yrs.	Persistent discharge following Radical. Great improvement after five doses. Refused more	Improved
2.	669685.	No culture taken	3 yrs.		Mastoids operated upon, March 17, 1913. Followed by erysipelas. Feb. 11, 1914. Stock vac. Ears dry after third dose	Cured
3.	676070.	S. P. Aur., Strep. Caps. Muc. Bac. Pyo.	10 yrs.	5 yrs.	Persistent discharge following Radicalop. Oct. 30, 1913. Jan. 19, 1914, started vaccine. Feb. 16, ear dry and healed. March 6, dry	Cured
4.	696043. Dr.	S. P. Aur., Bac. Pseudo-diphtheria	22 yrs.	?	Persistent discharge following two operations. Ear became dry after four doses	Cured
5.	Brown.	S. P. Aur., & S. P. Albus	29 yrs.	6 yrs.	Had 4 operations, last 4 years ago. Discharge persistent. Vaccines been used. Ear dry after 10th injection. Remained so 4 months	Cured
6.	656806.	S. P. Aur.	6 yrs.	1 yr.	Under treatment for recurrent discharge for 11 months. Dec. 10, 1913, began autogenous vaccine. 4 doses. Ears dry after 2d. Dry, March 2	Cured
7.	657816.	S. P. Aur. (Mastoiditis)	49 yrs.	1 wk.	Mastoiditis treated for 9 weeks. Refused op. Received 4 doses auto. vaccine. Ear dry after 2d dose and remained so	Cured
8.	661496	Strept. Caps. Muc., Bac. Pyo	4 yrs.	3 yrs.	Under treatment for 10 months. Irregular in visits. Gave 2 injections and ear became dry. Not seen since	Unknown
9.	662681.	Strept. Caps. Muc. (Mastoid)	30 yrs.	4 mos.	Chronic mastoiditis with fistula in post. canal wall. Intense pain. Gave 3 injections. Ear dry and fistula closed and remained so	Cured
10.	664364.	S. P. Auseus. (Mastoid)	40 yrs.	2 wks.	No improvement after 12 days' treatment. Advised operation. Refused. Gave 3 injections. Ear dry and rapidly became normal	Cured
11.	667121.	S. P. Aureus. (Mastoid)	38 yrs.	3 wks.	Gave 3 injections. All symptoms relieved	Cured
12.	670167.	Strept. Caps. Muc. Bac. Pseudo (Mastoid)	36 yrs.	10 days	Operation urged, but refused. Treated for 3 weeks, then gave vaccine. Ear well after 3d injection and no return	Cured
13.	680188.	S. P. Aur. & Bac. Pyo. (Mastoid)	14 yrs.	3 yrs.	Operation advised Aug. 15, 1913. Discharge persisted until Jan. 2, 1914. Ears became dry after 5 doses. Not seen since Jan. 28, 1914	Unknown

14.	681313.	Strept. long chain, & Bac. Pyo.	10 yrs.	1 yr.	Under treatment for year past at irregular intervals. Developed furuncle. Gave 3 injections. Ear became dry and remained so far past month. Cured
15.	686877.	Bac. Proteus Vulgaris (Mastoid)	25 yrs.	2 wks.	After 2 weeks of treatment was transferred for vaccine. All pain and discharge ceased after 2d injection. Two more given. Remained so. Cured
16.	690360.	Strept. long chain, B. Pseudo. Bac. Muc.	15 yrs.		Was treated without benefit for 2 weeks. Ears became dry after 2d injection and remained so. Cured
17.	690843.	Bac. Pyo.	20 yrs.	1 yr.	Was treated without benefit for 3 weeks. Ear became dry after 4 injections. Recurred after 12 days. Advised ossiculectomy. Improved
18.	691349.	S. P. Aureus. Bac. Pyo. & unidentified baccillus	19 yrs.	4 yrs.	Marked improvement after 3 weeks' treatment. Vaccine then given. Ear dry after 3 doses. Ethnoiditis (S. P. Aur.) also cured for past 3 months. Cured
19.	691665.	S. P. Aureus.	28 yrs.	yrs.	Under treatment elsewhere for months. Both each became dry after 2d injection. Remained dry for 6 weeks. Then slight recurrence. Renewed injection. Improved
20.	692763.	Stock vaccine	6 yrs.	2 yrs.	No improvement after 10 days' treatment. Ears dry after 2d dose. Recurred after seven days. Became finally dry after 5th dose. Dry 2 months later. Cured
21.	693241.	S. P. Aureus.	7 yrs.	1 yr.	No improvement after 2 weeks' treatment. Ears dry after 3d injection and remained so. Arm infected by vaccine. Cured
22.	694357.	S. P. Aureus.	22 yrs.	3 yrs.	Ears improved under treatment but discharge persisted. Six injections given, but discharge persists. Mouth in very bad condition. General Eczema. Improved
23.	694382.	S. P. Aureus, & Bac. Pyo.	25 yrs.	3 yrs.	Ears became dry after 4th injection and had remained so at the end of six weeks. Cured
24.	695352.	Stock vaccine	20 yrs.	yrs.	No improvement after 10 days' treatment. Developed furuncle. Gave 5 injections stock staphylococcus vaccine. Ears dry for past 6 weeks. Cured
25.	695402.	S. P. Albus	26 yrs.	yrs.	Some improvement after 10 days' treatment. Ear dry after 3d day. Remained so to date. Cured
26.	696015.	?	21 yrs.	yrs.	L. ear radical operation. Referred for R. ear. Ear dry after 6th injection for 2 weeks. Then slight discharge appeared. Still under treatment. Improved
27.	696485.	S. P. Aureus	19 yrs.	5 yrs.	Received 5 injections, but at irregular intervals. Ears improved. Refused to continue his treatment unless regular visits. Improved
28.	697510.	S. P. Aureus & Strept. Caps. Muc.	1½	3 mos.	Treated for month without benefit. Then gave vaccine. Ears dry after 3d dose. Remained so to date. Cured
29.	698144.	Stock vaccine	6 yrs.	4 yrs.	Gave stock vaccine because of feruncle. Ears became dry after 6th dose. Remained dry for past four weeks. Cured
30.	698663.	Strept. Caps. Muc.	9 yrs.	3 yrs.	Under treatment at intervals for over 1 year. Vaccine given Feb. 4 and 8, 1914. Ears had remained dry up to March 6. Cured
31.	699073.	S. P. Albus	8 yrs.	4 yrs.	Has had treatment at many places. Gave stock Staphylococcus. Ears dry after 2d injection for first time in years. Cured
32.	699348.	Bac. Pseudo-diphtheria	11 yrs.	2 yrs.	Ears much improved after four injections. Still under treatment. Improved
33.	701027.	Strepto. Caps. Mucosus	23 yrs.	8 yrs.	Has received 2 injections. Patient reports great improvement. Still under treatment. Mouth very septic. Improved

Unknown, 2; Improved, 8; Cured, 23.

WITHOUT VACCINE.

Cultures were taken and vaccines were made for seven cases who made but one visit.

1.	690811.	Bac. Pyo., & Bac. Pseudo., & Bac. Muc.	15 yrs.	3 yrs.	Ears became dry after 2d visit. Had remained so for two months when last seen. Cured
2.	690813.	Bac. Pyo.	20 yrs.	2 mos.	Removed polyp Ear dry after two weeks' treatment. Cured
3.	693257.	?	28 yrs.	3 yrs.	Removed polyp. Ear dry after eight days' treatment. Cured
4.	694329.	S. P. Aureus	6 yrs.	1 yr.	Had been under treatment for one month. Was then transferred for vaccine. Ear dry after 1st treatment and remained. Cured
5.	696034.	?	26 yrs.	yrs.	Ear had been operated upon 3 years previously. Discharge began 2 weeks ago. So much improved on 2d visit; vaccine not used. ?
6.	696410.	S. P. Aureus. & Bac. Pseudo.	43 yrs.	1 yr.	Ear dry and remained so after 1st visit. Cured
7.	696928.	?	17 yrs.	2 yrs.	Offensive discharge. Distressing eczema. Ear dry and eczema well at the end of 1 week. Cured
8.	696986.	Bac. Pyocyaneus	23 yrs.	1 yr.	Ear dry after 1st visit. Remained dry for one week and has not been seen since. Cured
9.	697590.	Bac. Pyocyaneus	4 yrs.	4 mos.	Ear dry after 2d visit. Remained dry for one week and has not been seen since. Cured
10.	699345.	No growth	28 yrs.	yrs.	Removed granuloma. Ear dry on 2d visit. Not seen since. Cured
11.	690286.	Bac. Pyo. & Bac. Pseudo.	5 yrs.	?	Made only 3 visits. No improvement. Unimproved

Unknown, 1; Unimproved, 1; Cured, 9.

tion; twenty-three have dry ears and are seen about every two weeks. All have appreciated the personal interest shown to them, and it is fairly certain that they will return on the first indication of any discharge appearing.

As said before, all our cases, except those of mastoiditis, have been seen during the past five months only, and we are not justified in claiming absolute cures for them. We hope to follow them for several years, as has been done by Dr. Nagle, and to report them again, possibly each year. In our minds, we are convinced that most excellent results have been obtained with the vaccines, especially so as many of our cases had resisted all other efforts, even failing to dry up after operation.

As so many cases have dried up under our local treatment, it may be interesting to state the methods employed. It is well to remember that in treating any suppurative process in the ear, it is necessary to keep all moisture out of the canal. If the

patients are told to irrigate, it is safe to say that the canals are never actually dried after the irrigation, and the treatment will be prolonged indefinitely. Bichloride of mercury irrigations invariably keep up discharge, if persisted in, due to the irritation of its constant presence in the canal. We have found that active cultures of the bacillus Bulgaricus will promptly overcome offensive discharges in most cases, and when the membranes are thickened the cultures frequently restore them to a healthy color after a very few applications. We employ suction with small canulas to remove all secretions from the canals, tympani, and attics, and as soon as the offensiveness disappears sufficient drying powder—aristol or nosophen with compound stearate of zinc or boric acid—is blown in to fill the inner portion of the canal. At subsequent visits, the canal is cleaned with suction, or alcohol, or cotton applicators if there has been no secretion, and is again dusted, and the patients are told to do nothing except to wipe out any secretion that may come.

In private practice, I have yet to see a case that does not dry up and remain dry under this method of treatment, when combined with proper nasal care.

40 EAST 41ST STREET.

THE DOSAGE OF HEXAMETHYLENAMIN.

It would thus be possible, by taking two doses of fifteen grains in twenty-four hours and passing water as seldom as possible, to keep the urine in the bladder continuously mixed with a strong solution of formaldehyde. In diseases of the bladder in which frequent micturition is a symptom the period during which the bladder is under the influence of formaldehyde is reduced to about six or eight hours, the time during which the drug is being excreted in quantity by the kidneys. In such cases small doses frequently repeated (seven grains every four hours) will be more effective in giving a continuous antiseptic action. Five or ten grains taken three times daily is the commonly prescribed dose. An increase in the dose to fifteen or twenty grains three times daily will be followed by an increased output of formaldehyde in the urine. In a number of cases under my observation no formaldehyde was produced in the urine when the patient was taking five or ten grains, but there was abundance of formaldehyde with doses of fifteen or twenty grains. Or when the formaldehyde reaction was feeble with the smaller doses it became powerful when the dose was doubled or trebled.—J. W. THOMSON WALKER in the *Edinburgh Medical Journal.*

THE BACTERIOLOGY OF CHRONIC PURULENT OTITIS.*

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The chronically suppurating ear has always presented many problems to the otologist. Since not much investigation has been carried on with reference to the bacteriology and the systemic allied conditions of this form of suppuration, it was decided to take a series of cases of this kind, such as are met with in the ordinary daily routine, and investigate the discharge with special reference to (1) the bacterial flora (2) the cellular elements, and (3) the matrix. These three embrace the main factors of importance in any discharge.

Since September, 1913, all cases of otitis media suppurativa chronica on Dr. McKernon's service at the Manhattan Eye, Ear and Throat Hospital have been assigned to Dr. Haskin and myself for the purposes of carrying out the above investigation. Early in this work we found that with the time at our disposal, we could not hope to follow out all the lines above outlined, so that as time went on, we narrowed the investigation down to the first part, viz., the bacteriology and the preparation of autogenous vaccines in suitable cases. Dr. Haskin and Dr. Brown are reporting the clinical use of the vaccines; Dr. Haskin mainly the use in the chronic purulent cases and Dr. Brown in furunculosis. I shall confine this conrtibution to the laboratory end mainly and the report now is intended as a preliminary one only, the conclusions drawn being tentative only, as no one realizes better than I that we are still only on the threshold of knowledge concerning vaccines and that time and wide experience will alone solve our difficulties.

In our work on the bacteriology of chronic suppurative otitis, the technique employed was, with a few minor differences, the same as that used by Miss Gignoux and the writer in 1910, when employed on similar work on the tonsil. Smears of the discharge, taken in the way indicated by Dr. Haskin, were made on blood or ascitic fluid plates, after the manner of making streak plates and were then incubated for twenty-four hours. The different colonies were then fished and stained films were made and the colony recovered on slant agar or in the case of the more fastidious organisms on the

*From the Department of Laboratories, Manhattan Eye, Ear and Throat Hospital, New York City. Read before the Otological Section of the New York Academy of Medicine, March, 1914.

richer media, such as blood serum, ascitic agar, etc., and, if they proved to be organisms that were capable of identification morphologically and were known to have any pathogenic power or even regarded as remotely having this, vaccines were prepared and used even before the final identification of the organisms. Direct smears were also made and stained by aqueous stains and by Gram stains, so as to serve as a check upon the plates. All organisms were studied on the various media and identified.

In fifty-three cases we found the following organisms: staphylococcus pyogenes aureus, seventeen times; staphylococcus pyogenes albus and citreus, six; streptococcus mucosus, eight; streptococcus hemolyticus, eight; pseudo-diphtheria (Hoffmans' and Xerosis), fifteen; pyocyaneus, sixteen; proteus, five; Klebs-Löffler, one; bacillus mucosus capsulatus, three. The bacillus subtilis and some other air-organisms were repeatedly found, but were discarded. In many of the direct smears, there were any number of spirochaete found, varying from that of Vincent to the refrigens and those found in the throat. It is my opinion that the true significance of the discharges from the middle ear will not be fully appreciated until an investigation is made of the rôle of these so-called innocent organisms from the throat, the torulae, spirochetae, etc., so often found in this class of cases and always discarded. An arbitrary division of bacteria into pathogenic and non-pathogenic varieties is attended with many difficulties in the case of the ear, since potentiality for serious mischief in this organ which so many reputed saphrophytes possess, renders such a classification of doubtful expediency. There are perhaps few organs which present a greater variety of bacteria than does the ear, particularly in the chronic forms of disease of this organ. Thus with the above technic, organisms, ordinarily looked upon as pathogenic, could be isolated in the big majority of cases, practically in 95 per cent. Some of these cases were of years duration and in all cases over months, so that the bacterial flora as time went on might have changed considerably, but the fact that pathogenic organisms could so be isloated encouraged us to try the vaccines in these cases. No anerobic cultures were made and no attempt was made to isolate the acid-fast organisms or by animal inoculations and agglutination experiments to differentiate the various strains of streptococci, as our primary object was to have a practical method of isolation and one that could be easily applied. No attempt was made to differentiate the bacillus butyricus or its allied groups.

It is well known that in the chronic discharges we find very frequently acid-fast organisms that resemble the tubercle bacillus, but which under rigid staining decolorize, and it is probable that these are strains of bacilli that have been acted upon by the bacillus butyricus, an organism found very often in the ear and which is non-pathogenic in itself, but when grown in simbosis with other organisms change these latter so that they have different staining reactions, and if an organism can be changed in this respect, it is not a far step to assume that it can be changed in other more important respects, as is well known with other sets of organisms.

With regard to the cellular elements, we think the study of these is well worth while. Under cytology, we may devide the cells into two groups, the epithelial and the mesoblastic. Epithelial cells are meatel, tympanic, or glandular. The commonest type is of course the squame, which in an healthy ear is absolutely confined to the meatus, but in chronic diseases invades the antro-tympanic cavity and becomes one of the most striking features of the discharge. These squames fall into two classes —the old and the young. The old are acid-fast, have either no nucleus or the area where the nucleus should be is only a shadow. On the other hand, the young or recently formed squames have large oval or round nuclei, which readily take the stain, are not acid-fast and are easily decolorized. We of course have all grades in between these two extremes. This point may not seem of much importance, but this acid-fast property of old non-nucleated squames affords not only presumptive evidence of a cholestematous mass involving the antro-tympanic cavity assuming, of course, that the specimen was taken from the tympanum and not from the meatus, but fragments may be mistaken for the Tb. The normal tympanic epithelium is only seen in the early acute stage of infection; such epithelium does not occur in chronic discharges, the tympanic lining having been transformed into the squamous or epidermal type.

We next consider the mesoblastic cells and these may be divided into the wandering and the fixed cells. The wandering cells are very important. They comprise the leucocytes, the lymphocytes, and the plasma cells. The leucocytes and lymphocytes are usually classed as pus cells, but inasmuch as they are unlike in function, structure, and significance, some distinctions between them are necessary. The leucocyte of a recent or acute exudate is very sharply defined and the nucleus stains deeply, but degeneration soon sets in and we have well-known series of changes which are in-

dicative of the death of the cell. As the discharge becomes chronic, large mononuclear leucocytes become more numerous, in contrast with the very acute discharge, in which the polynuclear cells predominate. The lymphocyte is smaller than the leucocyte, with a slight amount of protoplasm, a large clear nucleus, and stains very deeply. The important thing is that in acute exudate changes about one lymphocyte can be counted to twenty or thirty leucocytes, but when the discharge comes from a granulation source the lymphocytes are strikingly increased, sometimes being equal in number to the leucocytes. Thus the presence and the proportion of these cells afford a reliable evidence of the existence of granulation tissue and the nature of the pus-producing process. They possess little, if any, phagocytic power. It must be remembered, however, that the proportion of lymphocytes in infants is much higher than in adults.

The next class of cells are the fixed cells and of these the epitheliod elements are those most frequently found. These cells are derived from the lining of blood and lymph channels and also from the perivascular spaces of the arterioles. They play an important part in the granulomatous formations, especially tuberculosis, etc. Although seen sometimes in acute inflammations, their presence in large numbers is characteristic in a chronic discharge of tuberculosis.

We thus see that an examination of the cellular elements may be a great aid to diagnosis and prognosis in a chronic purulent otitis.

Not much need be said about the matrix, except that at times we can demonstrate the flat rhombic crystals of cholestrin and the fatty acids, characteristic of old, desquamative changes in cholesteatoma.

To sum up then shortly, the conditions responsible for chronic discharge from the middle ear are so varied that pathological accuracy calls for some differentiation. As most frequently happens, granulation tissue is responsible for the pus. Evidence of this is afforded by the presence of leucocytes of all kinds, large, small mononuclear and polynuclear, normal and degenerated, but especially by lymphocytes which are very numerous, while epithelial cells are not uncommon. Bone disease may be marked by the presence of myelocytes or osteoblasts or chemical analysis shows the presence of an increased amount of bone salts.

Cholesteatomata is indicated by the presence of closely packed squames with or without bacteria, a distinction that may at first glance appear unnecessary, but is really of great importance, especially when the cells are of antral origin, for a septic cholesteatomata in that situation affords a stronger indication for radical measures than a non-septic one—an interpretation amply supported by examination of antral contents removed at operation.

Among chronic discharges we meet with is one which deserves special attention—it is very profuse, fetid, opaque, and like cream. On examination, it is found entirely free generally from cells, either epithelial or septic leucocytic, but consists of throat organisms in an albuminous matrix—not true pus, therefore, but a polymicrobic emulsion. With such a discharge, in which there are spiral and fusiform bacteria of many varieties and no cells, the existence of an active granulation surface can without doubt be excluded. Thus here, active aural measures and measures to do away with the original infection are called for. It is the differentiation and identification of such a condition that will repay you in the knowledge gained. The throat organisms are such as spirochetae fetida, bacillus fusiformis, leptothrix, etc. Also there are the organisms found in pyorrhea alveolaris, in tonsilitis, etc. In acute exacerbations, the influenza bacillus, micrococcus catarrhalis, etc., are found, but we did not find them in the uncomplicated chronic condition.

Only six cases were examined carefully as to their cellular contents and as to the matrix, but we believe that more attention is going to be paid to these parts of the discharge in the future.

We have drawn at some length on the admirable work of Wingrave and Milligan, in which the ear discharges receive the attention they deserve.

LATENT MASTOIDITIS.

We may speak of a mastoiditis becoming latent when an inflammation of the mastoid cells persists after apparent termination of the acute inflammation of the middle ear. Otoscopic examination may reveal an intact tympanic membrane, which has not returned to its normal color; there may or may not be a mild degree of deafness; the long process of the malleus may be ill-defined, or there may be, what is still more important, a hyperemia or slight bulging at the upper posterior quadrant of the tympanic membrane. In other cases, the tympanic membrane may be absolutely normal in appearance, and it is quite an easy matter for us to overlook a latent mastoid inflammation if we forget that a negative finding of the tympanic membrane has no significance as far as the condition of the mastoid cells is concerned.—WM. MITHOEFER *.in the Lancet-Clinic.*

ON THE TREATMENT OF FURUNCULOSIS OF THE EAR WITH VACCINES.*

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Since the introduction of vaccine therapy, as suggested on a scientific basis in 1776 by Jenner, the number of research workers has been large, and most of the recent work in this field has followed lines laid down by Wright of London.

Although opposition to vaccine therapy was at first almost universal, even as late as 1910, when Dwyer furnished his very valuable article on the production and use of the vaccines, many of our profession were still loud in their denunciation of this form of treatment. Nearly five years have passed, and to-day one is safe in saying that owing to the painstaking and laborious work of the investigators in this field of work we have a therapy, the value of which can scarcely be overestimated and that, when used in the correct way, at the right time, we have in the His extract of leucocytes and in the vaccine agents for combating certain diseases that have no equal and the use of which has abundantly proved all that is claimed for them.

There are even now many physicians attempting to secure results from the vaccines, some of whom express themselves as having no faith in these remedies, and I am inclined to believe that such skepticism is the result either of a lack of acquaintance with the preparation used, or of using commercial vaccines, or of having used a wrong preparation at the wrong time, or upon the wrong patient.

At the very beginning it is necessary to recognize the fact that the His extract of leucocytes, the serums and the vaccines, are three independent and wholly different preparations, performing their work in the system by different physiological methods, and not all intended for use in the same patient at one time.

To consider now the vaccine therapy, in its relation to aural lesions, and particularly furunculosis, the foundation of this is the fact that when a foreign body, especially one of an albuminous nature, is injected into the human system, it stimulates the system to the formation of antibodies, which combat the offending organisms, and that each particular strain has power only to form antibodies of a corresponding nature in the system. It is easy to see that if the physician injects into a patient a strain of staphylococcus vaccine, while the infecting organism in the patient's system is the streptococcus, the natural result will be failure.

Therefore, two facts are self-evident:

First: The right vaccine must be used.

Second: A correct diagnosis ought to be made before beginning treatment.

There seems to be no limit to the number of articles written upon this first question; what vaccine shall be used? The answer, without any hesitation, is, an autogenous vaccine.

Autogenous vaccines are procured from cultures made from the patient who is to receive the treatment. In autogenous vaccine the species of bacteria are isolated and grown in pure culture from which the vaccine is produced, and when used in a single strain, or in combination, the proper dosage is regulated at the time of administering it.

The so-called stock vaccine is in many cases the product from some original strain, kept no one knows how long, on artificial media in the manufacturer's laboratory, so that the latter vaccines made from this strain are quite changed from the original. The name "polyvalent" has been applied to a shotgun charge of mixed stock vaccines, the purpose of which is to hit a minute and possibly uncertain species of bacterium with a charge of therapeutic ammunition that will spread over a large area.

There is too often little correspondence between their contents and the organisms which they are intended to combat and moreover their use is unscientific and decidedly unfair to the patient.

In the foregoing I refer to vaccines for the treatment of furunculosis of the ear and allied aural conditions only, and while I do not assert that no good results have been secured by commercial vaccines in these lesions, I insist that the freshly prepared and autogenous vaccines are far superior to and yield much better results than the commercial, and should always be used when possible to secure.

The second question related to diagnosis. It is evident from what has been said about the formation of antibodies, that the first absolutely essential thing in the successful treatment of infectious conditions of the ear by vaccine is the establishment of a correct diagnosis. On more than one occasion have I heard from critics who have said that they have no use for vaccines, because they have tried them in every way, only to meet with disappointing results. Now, what has been the cause of these failures? Of course, anyone can put some pus on a slant agar, heat it to 60°, dilute it with saline solution and then inject the resultant mixture into an unsuspecting patient, and probably have failure, so

*Read before the Section on Otology of the New York Academy of Medicine, March 13, 1914.

No.	Name.	Sex.	Age.	Location.	Ear.	Duration.	Prev. Treatment.	Discharge.	Pain.	Number Injections.	Amount.	Result.	Remarks.
1	J. H.	F	28	Both canals closed.	R-L	2 Weeks	Camphor oil	2 Weeks	Intense	1	300	?	Patient objected to this form of treatment

No.	Name.	Sex.	Age.	Location.	Ear.	Duration.	Prev. Treatment.	Discharge.	Pain.	Number Injections.	Amount.	Result.	Remarks.
1	J. H.	F	28	Both canals closed.	R-L	2 Weeks	Camphor oil	2 Weeks	Intense	1	300	?	Patient objected to this form of treatment.
2	F. J. O.	M	46	Anterior and floor.	L	1 Week	None	No	3 Days	3	400	Cure	Pain gone after 6 hours. Had great amount of oedema.
3	L. P.	M	34	Anterior wall.	L	3 Days	None	No	Severe	3	300 to 400	Cure	Pain gone after 6 hours.
4	B. C.	F	13	Polyp from attic half filling Ex. Aud. canal. O. M. P. C.	R	1 Year	Everything	Profuse	No	15	250 to 700	Cure	Removed polyp. Discharge continued profuse. Discharge much less after 2d injection. Absolutely dry for 8 months. No sign of polyp. Straph. A. & A. mixed.
5	M. F.	M	27	Floor.	R	24 Hours	None	No	Slight	1	250	Cure	
6	M. R. L.	M	20	Anterior wall.	L	1 Month	None	Slight	Slight	3	250 to 400	Cure	No pain after 1st injection. No discharge after 2d.
7	L. L.	F	18	Diffuse complete occlusion of canal oedema-marked.	L	Some Days	None	Yes	Great	3a 3s	350 to 750	Cure	Pain gone after 12 hours. Ear dry after 4 injections. Gave 3 autogenous.
8	J. H.	F	33	Diffuse.	L	4 Days	None	No	Much	3	250 to 400	Cure	
9	F. J.	F	13	Floor.	L	2 Days	Incised elsewhere.	Yes	Intense	9s 4a	250 to 600	Cure	A very angry one. Improved slowly. Gave 4 autogenous mixed. Dry after third injection.
10	J. J. K.	M	29	Aural Fistula following Mastoid. O. M. P. C.	L	7 Years	Operated 4 times. Last 4 years ago. 7 vaccines at Army Hospital. No improvement	Very profuse in front and behind.	Moderate	14	300 to 800	Cure	Used mixed Staph. Aureus. and albus pus stopped after 10 injections. Fistula healed after 14. Has been dry and healed 8 months.
11	J. K.	M	28	O. M. P. C. & furuncle A. & F.	L	Years	None	Much	Yes	3s 7a	250 to 600	Cure	Improved slowly under stock Autogenous mixed. Seven injections given.
12	A. C.	M	37	Diffuse, canal occluded.	L	4 Days	None	No	Moderate	2	400 to 500	Cure	
13	D. B.	M	19	Diffuse.	L	5 Days	None	No	Slight	3	400 to 500	Cure	
14	J. F.	M	26	O. M. P. C.	R	6 Years	Many things	No	Slight	1	250		Did not return.
15	H. D.	F	20	O. M. P. C.	L	6 Weeks	None	Yes	Yes	3	200 to 400	Cure	Steph. aureus pure.
16	S. S.	M	19	O. M. P. C.	L	1 Week	None	Yes	Much	3	250 to 500	Cure	Staph. aureus and albus.
17	A. S.	M	49	Diffuse, angry, much oedema.	R	2 Weeks	None	No	Intense, no sleep	9	250 to 750	Cure	No pain after 12 hours; no oedema in front of auricle after 4 injections.
18	B. S.	F	65	Diffuse.	L	2 Weeks	None	Yes	Intense No sleep	9	250 to 750	Cure	No discharge after 2d injection
19	L. H	F	41	Diffuse.	R	5 Days	None	No	Moderate	3	250 to 750	Cure	
20	L. L.	F	21	Anterior wall.	L	1 Week	None	No	Moderate	1	400	Cure	
21	B. Z.	F	38	Diffuse.	L	10 Days	Incised elsewhere	Yes	Intense after incision	5	300 to 750	Cure	No pain after 2 injections.
22	E. B.	F	41	Floor and anterior.	L	5 Days	Incised	Much	Intense	2a 1s	300 to 700	Cure	Mixed Staph. A. & A.
23	A. B.	M	35	Anterior wall.	L	1 Week	Incised	Much	Yes	1	300	Cure	Did not return.
24	K. C.	F	23	Diffuse.	R	2 Weeks	None	Yes	Intense as tho dragging	1s 3a	500 to 750	Cure	Staph. aureus.
25	F. A.	F	20	Floor both.	R-L	Days	Both	Yes	Yes	6	300 to 500	Cure	
26	F. C.	M	23	Floor and anterior.	L	4 Days	None	No	Yes	2	300	Cure	Pain gone in 12 hours.
27	F. L.	F	17	Diffuse.	L	13 Days	Family doctor, no improvement	Yes	Yes	3	250 to 500	Cure	Pain gone in 12 hours.

No.	Name.	Sex.	Age.	Location.	Ear.	Duration.	Prev. Treatment.	Discharge.	Pain.	Number Injections.	Amount.	Result.	Remarks.
28	J. E.	M	28	Diffuse.	L	3 Days	None	Yes	Yes	2	350 to 500	Cure	
29	J. E.	M	28	Diffuse.	R		None	No	Yes	3		Cure	These were the same patients. The right developed a furuncle as the left ear was nearly well.
30	R. E.	F	31	Floor and anterior O. M. P. C.	L	6 Months	None	Ear	Moderate	4	300 to 600	Cure	Staph. A. & A.
31	L. S.	F	23	Floor and anterior.	R	1 Week	Yes	No	Yes	2	250 to 500	Cure	
32	M. M.	F	35	Diffuse.	L	2 Weeks	Lanced four days ago	Yes	Yes	1	300	M.	Did not return.
33	J. W.	M	16	Diffuse.	L	1 Week	None	No	Intense on motion	2	300 to 500		One Staph. A. & A. One autogenous S. Aur.
34	C. M.	M	29	Anterior wall.	L	7 Days	None	Much	Intense	3a 1s	250 to 600	Cure	No pain after 18 hours.
35	M. R.	F	24	Diffuse.	L	2 Weeks	Incised elsewhere	Yes	Yes	3	350 to 500	Cure	
36	F. S.	M	31	Floor.	R	8 Days	None	No	Moderate	2	300 to 400	Cure	
37	M. R.	F	29	Diffuse.	L	10 Days	Wax removed at other hospital	No	Intense Days	3	300 to 500	Cure	
38	A. M.	F	42	Diffuse.	R	3 Weeks	None	No	Moderate	4	300 to 500	Cure	
39	G. W.	M	25	Diffuse.	R	10 Days	None	No	Intense	1a 2s	300 to 500	Cure	
40	F. W.	M	19	Anterior and floor.	L	3 Days	None	No	Moderate	2	300 to 500	Cure	
41	M. B.	M	21	Anterior and floor.	R	4 Days	None	No	Yes	5	250 to 500	Cure	Pain gone after 10 to 12 hours.
42	J. J. K.	M	29	Anterior and floor.	R-L	3 Days	None	Yes	Yes	3	250 to 500	Cure	
43	A. M.	F	45	Anterior.	R	1 Week	None	Yes	Yes	3	250 to 500	Cure	This furuncle had begun to "head." It did not rupture and dried up completely.
44	M. K.	F	49	Diffuse.	L	2 Weeks	Poulticed by advice of doctor	No	Intense, no sleep,				Refuse vaccine.
45	A. P.	F	24	Diffuse enlarged cervial and mastoid glands.	L	2 Weeks	Otisville	No	Great	6	250 to 750	Cure	Patient has T. B. Came from Otisville with suspicious mastoid. Large oedema. Large tender glands cervical. Canal was occluded by oedema. Lost 20 lbs. in weight when here. Dec. 5, 1913, to Jan. 5, 1914. Aural condition and glands completely cured.
46	T. A.	M	11	Floor and anterior.	R	2 Weeks	None	Yes	Some	4	250 to 500	Cure	
47	T. G	M	26	Diffuse.	R L	3 Weeks	None	R-Yes L-No	Moderate	8	300 to 750	Cure	No pain after 2d injection; thought well and stayed away 10 days; returned and received 6 more injections.
48	M. M.	F	38	Floor and O. M. P. C.	L	10 Days	Yes	Yes	Intense days	4	300 to 750	Cure	Staph. A. & A.
49	F. J	M	50	Floor and anterior, much oedema.	L	2 Weeks	None	No	Intense, no sleep	4	300 to 750	Cure	All pain and surrounding oedema gone after 3d injection.
50	J. McK.	M	6	O. M. P. C.	R	1 Year	8 Months	Yes	No	8	200 to 500		Right ear has slight discharge at present.
				Mastoid & O. M. P. C.	L	2 Years	Op. no cure	Yes	No	9			Left ear is dry.
51	A. O.	F	23	Diffuse.	L	4 Weeks	Incised 3 times in 4 weeks N. G.	Slight	Much	4	250 to 750	Cure	
52	H. J.	F	20	Diffuse.	L	3 Weeks	None	No	Much	2	350 to 500		Did not return. Professional diver with traveling vaudeville. Canal was nearly well at two visits.
53	A. N.	F	34	Floor.	L	2 Days	None	No	Severe	3	250 to 500	Cure	
54	S. B.	M	24	O. M. P. C.	L	20 Years	Treated in Europe years;	Much	Slight	2s	250 to		Autogenous Staph. aureus.

52	H. J.	F	20	Diffuse.	L	3 Weeks	in 4 weeks N. G. None	No	Much	2	to 750 350 to 500		Did not return. Professional diver with traveling vaudeville. Canal was nearly well at two visits.
53	A. N.	F	34	Floor.	L	2 Days	None	No	Severe	3	250 to 500	Cure	
54	S. B.	M	24	O. M. P. C.	L	20 Years	Treated in Europe years; no benefit	Much	Slight	2s 7a	250 to 750		Autogenous Staph. aureus.
55	H. P.	M	17	Floor and anterior.	R	2 Weeks	None	No	Slight	2	250 to 400	Cure	
56	A. B.	F	8	O. M. P. C.	R-L	7 Years	Everything	Yes	No	4	250 to 500	Cure	
57	E. S.	F	45	Floor and post.	R	8 Days	None	Yes	No	4	250 to 500	Cure	
58	J. C.	M	4½	Diffuse.	R	2 Days	None	No	Yes	2	250 to 300	Cure	
59	E. G.	F	2	Diffuse.	L	4 Days	Argyol 50%; no improvement	No	Much	2s 4a	300 to 750	Cure	The oedema of side of head was so great patient was sent to hospital for a mastoid operation.
60	B. S.	F	17	Diffuse canal occluded.	R	6 Days	None	Yes	Severe	6	250 to 750	Cure	
61	A. S.	F	22	Floor.	R	2 Weeks	None	Yes	Moderate	6	250 to 750	Cure	
62	M. O.	M	30	O. M. P. A. Perichondritis Furuncle	L	4 Days	Drum incised, perichondritis followed, furuncle next	Yes	Great	1s 10a	400 to 750	Cure	Autogenous Staph. Aureus.
63	L. M.	F	18	Floor.	R	3 Days	None	No	Slight	4	250 to 450	Cure	
64	G. M.	F	20	Diffuse.	R	9 Days	Incised elsewhere 40 days before; N. G.	Yes	Moderate	4	300 to 500	Cure	
65	N. M.	F	50	Canal occul.	L	4 Weeks	Incised 3 weeks before, worse	Yes	Great	6s 3a	300 to 750	Cure	Improved slowly with stock. Autog. Staph. A. & A. mixed.
66	M. Z.	F	40	Anterior.	L	4 Weeks	Incised 3 weeks ago, no improvement	Yes	Yes	1s 4a	300 to 750	Cure	After 2d Autog. Staph. A. & A. looked as though never sore.
67	B. R.	F	25	Floor and anterior.	L	6 Days	None	No	Yes	3	250 to 500	Cure	
68	V. B.	M	32	Floor and anterior wall.	R	14 Days	Local	Yes	Yes	1s 4a	300 to 750	Cure	Autogenous Staph. patient looked as though a parotitis was beginning—all cleaned up.
69	R. L.	F	38	Circ.	L	2 Weeks	Lanced 10 days ago	Yes	Severe	6	500 to 1000	Cured	Furuncle cured after 4 injections. A mass of granulations protruded from the incision; all gone after 6 injections.
70	M. D.	M	8	O. M. P. C.	L	3 Weeks	None	Much	No	4s 5a	250 to 500	Cured	No drum left in ear.
71	J. M.	M	10	O. M. P. C. after Mastoid 1 year ago.	L	9 Years	Everything, operation	Much	No	3s 4a	250 to 600	Cured	After mastoid operation ear discharged as much as before.
72	M. F.	M	30	Circ.	L	2 Weeks	No	Yes	Yes	5	250 to 500	Cured	
73	M. O'C.	F	38	Drif.	L	1 Week	Iodine	Much	No	3	250 to 500	Cured	This furuncle had not ruptured, but completely occluded meatus and was angry in appearance.
74	F. B.	M	6	Drif.	6	2 Weeks	No	Yes	Much	3	250 to 500		The canal was closed by a large bladder of fluid, all subsided.
75	A. L.	F	13	Drif.	13	1 Week	No	Much	No	5	25) to 500		

Males—35. right ear, 30. Females—40, left ear, 45. Both ears in same patient, 7.
Simple cases treated with "home-made" stock vaccines, 61; cured, 56; did not return, 5.
Cases complicated by O. M. P. C., 8; cured 8.
Cases complicated by Phthisis, 1; cured, 1.
Cases Strephtococcus infection, 2; cured, 2.
Cases complicated by O. M. P. A., 3; cured, 3.
Cases changed from home-made stock to autogenous vaccines, 14.
Cases now under observation with treatment continued, 10; cured, 10.
In column No. of Injections "S" signifies stock vaccines used; "A" autogenous. Amount is stated in millions.

far as a good result on the lesion is concerned, but in the use of vaccine therapy it is just as important to establish a correct and definite diagnosis, if a good result is to be secured, as it is to be sure of one's diagnosis before beginning treatment of a heart or kidney lesion. Every man and every laboratory does not do this. For the successful treatment of these infected conditions of auditory apparatus, one must first know *what organism is doing the damage,* not only as regards the morphology, by aid of the microscope, but by a thorough study of a culture, and even if found necessary, by animal experimentation as well. In other words, a correct diagnosis must be made. It is not necessary in every case to employ every step of the process, just specified—for in some cases the condition is self-evident. The technic used by us is as follows:

The auditory canal is first irrigated thoroughly with boric acid or saline solution, or wiped clean with cotton, and then the canal is plugged with cotton impregnated with 95 per cent. alcohol, which is allowed to remain in situ for about fifteen minutes. The cotton plug is then removed and with the aid of a Siegel otoscope the pus is aspirated through the perforation. In this way the possibility of getting pure cultures is greatly aided. One avoids contamination from air organisms. Streak plates are then made on blood agar and ascitic fluid agar with the platinum needle or loop, and incubated for twenty-four hours, after which the colonies are fished and recovered on slant agar, or, as is more often the case, with us, on Dorset's egg media, to which a little ascitic fluid has been added. The vaccines are then prepared in the usual way from the pure cultures.

In dealing with furuncle cases, we can often recover direct on egg media or agar, without preliminary plating and fishing, as there is not so much likelihood here of contamination. But in the case of subacute and chronic otitis, we have found it necessary to carry out the above technic. The organisms are identified by all the means at our command, as morphology alone is quite untrustworthy in some cases. This identification by culture, and if necessary by agglutination tests, etc., takes some days, but we have been in the habit of making up the vaccines at once, and using them if organisms are found that are killed by a heat at 55° C. to 60° C. in one hour.

The process just described takes usually two days, and in order that no time be lost in attacking the disease, we give an initial dose of a pure staphylococcus aureus or albus culture. This is not the stock vaccine of the market, which is made of mixtures of different strains of bacteria of the same or allied species, and is of uncertain strength and efficacy, but a vaccine made in our own laboratory from at least twenty to thirty strains of staphylococcus aureus, albus, or citreus, isolated at various times from a number of patients who are all suffering from a similar condition, and strains that have been freshly isolated.

When the patient returns for the next treatment the morphological classification has been determined as well as the cultural diagnosis made in the majority of cases. If we find that the infecting organism is one of those specified above, and corresponds to the organism of the vaccine used in the first treatment, and if there has been an alleviation of the symptoms and an improvement in the general condition of the ear, we generally continue giving the "home-made" stock vaccine. If, however, the organism is of a different type, an autogenous vaccine is ready for use for this, the second treatment. In some cases where the progress of the case has not been satisfactory enough to satisfy, under the use of our own "home-made" stock vaccine, an immediate beneficial effect has been obtained when the autogenous vaccine has been substituted. In brief: a scientific diagnosis is made with as much or even more care than is the usual physical diagnosis of disease, and it is to this fact that I attribute the success in the following fairly comprehensive series of 75 cases, with no failure to report.

Why all this care in diagnosis and the selection of vaccine?

Because the function of the vaccine is to stimulate the system to form antibodies and opsonins which combat the disease, and inasmuch as it has been shown that a certain bacterium will produce a certain antibody or a certain opsonin, and that that antibody or opsonin will be effective against that bacterium and against that alone, it is evident that the vaccine used must contain an antigen the same as the offending organism, otherwise no antibodies or opsonins will be formed and no result will be obtained, unless it may be a possible weakening of the system of the patient.

40 EAST 41ST STREET.

It is surprising how much information can be derived by abdominal palpation conducted with the patient in a hot bath, the temperature of the water being gradually raised to 105° F. It usually secures as much relaxation as does the administration of an anesthetic, sometimes even more. In addition to the avoidance of the dangers and the disagreeable features of narcosis, it has the important advantage that the patient is able to call the examiner's attention to sensitive areas.

LATENT MASTOIDITIS.

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The title of this paper was suggested to me by two cases of mastoiditis seen within the past few months, in which many of the symptoms usually evident in acute mastoiditis subsided, and in which an operation was justified because of the long continued and profuse discharge.

As a rule conservatism in surgery of the mastoid is of prime importance, and in many cases when acute symptoms have been present, the patients have recovered without any operation being performed. However, a surgeon must use a certain amount of circumspection and should not prognosticate too favorably upon a case until he is absolutely sure that it will clear up within a reasonable length of time. The two following cases will illustrate this point:

CASE I:—Mr. K. developed an acute suppurative otitis media in his right ear the latter part of August, 1913. The ear drum was incised on the second day by another otologist. For a period of ten days the patient was in bed suffering from a profuse discharge from the ear, temperature ranging from 100° to 101°, pain over the mastoid, and headaches. The fever subsided, but the discharge remained profuse. At the end of two weeks he came to see me, complaining of the discharge from his ear, with a slight parietal headache, dizziness, and tinnitus. Examination of the ear after proper cleansing showed a sagging of the postero-superior portion of the drum, and pulsation of a small opening in the drum from which there was a profuse discharge of thick tenacious pus. He complained of no pain over the mastoid, nor was there the least tenderness over any portion of it.

On account of the profuse discharge and the evidences shown by the drum, I told him that he had mastoiditis, which might possibly clear up.

I saw him almost daily for the next three weeks, during which time there were no fever, no pain, and no headache. The patient slept well, and was going about his business. During this time I opened the drum more widely on two different occasions, but the discharge still continued to be as profuse as ever. Feeling that things were not getting any better and probably at any time they might become worse, I advised opening the mastoid. Naturally I was not surprised when he disagreed with me about this procedure, but to overcome any doubts on his part *x*-ray pictures of both mastoids were taken by Dr. George S. Dixon of the New York Eye and Ear Infirmary. The radiogram of the right mastoid indicated a complete destruction of the whole bone extending backwards beyond the sinus and down into the tip. On operating two days later the entire mastoid cavity was found filled with pus (streptococcus). It was completely exenterated and the wound closed up, all except the lower angle, as described by me in the AMERICAN JOURNAL OF SURGERY, June, 1911. The patient was an uneventful recovery, leaving the hospital at the end of twelve days. Some of the hearing has returned, but it is still impaired, due to a great extent to his negligence in having the ear properly massaged.

CASE II:—In February of this year I was called upon to treat a young woman suffering with a severe pain in her ear. I found a bulging drum which I opened immediately. There was a profuse discharge of serum, which the following day became purulent. For the following week, during which time she was at the New York Eye and Ear Infirmary, the discharge continued profuse, her temperature ranged between 100° and 101°, and there was acute tenderness over the whole mastoid. When she left the hospital at the end of a week her temperature was normal, she had no pain or headache, slept well, and had no symptoms except the discharge from her ear. I treated her conservatively during the next two weeks, but at no time was there any subsidence of the discharge. On deep pressure a slight amount of tenderness could be ascertained over the region of the antrum. The drum showed a slight amount of sagging of the postero-superior wall.

After three weeks I deemed it advisable to open the mastoid, and was not surprised to find the entire cavity filled with pus and granulations. The mastoid was thoroughly cleaned out and the wound closed except a wick drain at the lower angle, which was removed on the second day. The patient made an uneventful recovery, and left the hospital at the end of seven days.

These two cases clearly indicate that there are many cases of mastoiditis which do not go on to resolution and cure, although the main symptoms entirely disappear. I do not believe that one does any harm in waiting provided the case can be watched daily, so that one may note whether any unusual symptoms develop. Apparently, there are certain mastoids which have an anatomical arrangement that permits of a through drainage of the very deep cells by intercommunication channels. Very often in these cases the underlying bone tissue forming the base of the mastoid is very dense, so that at no time are dangerous parts exposed.

There are two signs that indicate the progress of the disease, and which make it apparent that sooner or later an operation will have to be done. These two signs are a profuse discharge of pus which does not show a tendency to subside, and a sagging of the postero-superior quadrant of the drum.

Apparently, one does little harm in waiting for a considerable length of time before he operates upon these cases, even when the infection is due to such virulent organism as the streptococcus mucosus. It is my belief that as time goes on the patient

devolps a certain amount of resistance to the infecting organism, or else the organisms lose some of their virulence. Apparently, the discharge is kept up by the inflammatory reaction within the mastoid cells, which cannot be properly cleaned out, plus the continuous application of low-grade infecting bacteria. In no other way can I account for the unusual success attained in closing up these wounds after so much infection has taken place for so long a time, and getting them to heal by primary intention.

Latent mastoiditis is a condition which possibly is met with very often. I believe that frequently after the acute symptoms have subsided we often have to deal with a pus cavity in the mastoid, which sooner or later must be attended to, unless we wish the infection to go on to some complicating condition that will necessitate a far more radical measure.

11 WEST 81ST STREET.

PERIRENAL HYDRONEPHROSIS, PSEUDO- OR SUBCAPSULAR HYDRONEPHROSIS.

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When the urinary secretion finds its way under the fibrous capsule of the kidney, and dissects this away from the surface of the organ so that a pseudo-cyst is formed, we have the condition which has received various names, the most descriptive being *perirenal hydronephrosis, pseudo-hydronephrosis,* and *subcapsular hydronephrosis.* So little has been written concerning the pathology of this lesion, and the reported cases in the literature are so few in number, that it may be of some interest to report two cases that have come under my own observation.

Albarran, in his book,* describes this condition under the caption uronephrosis, regarding as subcapsular uronephrosis that form in which fluid accumulates under the capsule of the kidney. In these cases, he says, there is usually an orifice of communication between the kidney pelvis and the perirenal pocket.

Kaufmann, in his book on Pathology,** speaking of hydronephrosis, refers to two varieties of fluid accumulation outside of the kidney: pararenal hydronephrosis and perirenal hydronephrosis, the fluid accumulations being under the fatty capsule in the former, and under the fibrous capsule in the latter type.

Babitzki,§ in an exhaustive review of the literature, concludes that these cases are rare, for he could find only twenty-two in the literature. His own case may be briefly cited, for it is typical of the condition:

In a patient 36 years of age, who gave symptoms of pain in the left flank, a large tumor developed two weeks before admission to the hospital. This tumor was fluctuating, apparently retro-peritoneal, and was diagnosticated as probably involving the kidney. No urine could be obtained from the left side upon cystoscopy and ureteral catheterization. Nor did the indigo-carmine show any function on that side. Upon operation, a large cystic tumor was found which contained chocolate-colored fluid, and at the bottom of the cyst the surface of the kidney could be seen. It was apparent that this cystic tumor was produced by a rupture of the renal pelvis, the escaping urine leading to the formation of a pseudo-cyst.

According to this author a diagnosis was correctly made in only two cases of those recorded in the literature. If, in a case of hydronephrosis, there should occur a sudden increase in the size of the tumor and sudden pain, we would be entitled to think of rupture, and the possible production of a subcapsular hydronephrosis, although an escape of urine outside the capsule is more probable than under it.

The first case which I wish to report is remarkable, both because of the fact that there existed a congenital obstruction to the urinary outflow in the urethral tract, in an infant nine months of age, and also because of the presence of lesions of both kidneys: an infantile undeveloped kidney associated with a hydronephrotic kidney and subcapsular urinary exudation. Inasmuch as only the pathological aspect of his case was personally observed, I am indebted for the following brief excerpt of the history to notes taken on Dr. Gerster's service.

I. G., aged nine months, admitted to the Mount Sinai Hospital (service of Dr. Gerster), December 23, 1907, was reported to have had a great deal of trouble with urination for at least three months. The baby cried during each act of micturition and seemed to strain a great deal. For about a week an enlargement of the right half of the abdomen had been noticed.

On admission to the hospital, the child appeared to be fairly well nourished, but a mass extending

*Médecine Operatoire des Voies Urinaires, Paris, 1910.
**Spezielle Pathologische Anatomie, Berlin, 1909.

§Archiv. f. Klin. Chir., 1912, vol. XCVII., p. 993.

from the free border of the ribs down to Poupart's ligament could be felt on palpation.

Nephrectomy was decided upon and a large subcapsular exudation around the hydronephrotic kidney was revealed. Death occurred, the autopsy showing an insufficient, infantile, and hydronephrotic organ.

Pathological examination. Lying in a somewhat thickened capsule, large enough to contain a body as large as a grapefruit (Fig. 1), is a small kidney. The sac is empty, its contents—clear straw colored fluid—have escaped at the time of operation. The intrarenal portion of the pelvis of the kidney is considerably dilated, and the parenchyma correspondingly diminished in volume.

The capsule is everywhere detached from the surface of the kidney and here and there presents

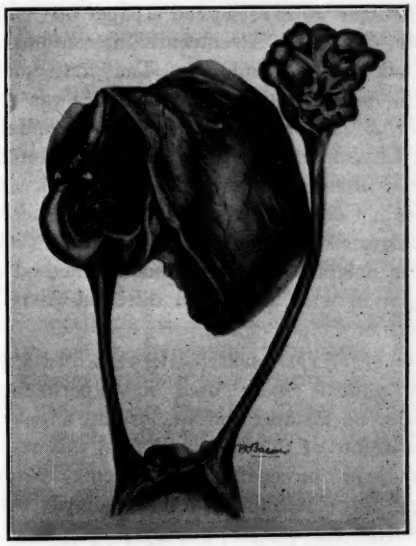

Fig. 1.

whitened and thickened areas, some covered with fibrinous deposit. About the middle of one surface of the kidney, and about 1 c.m. from the convex border, there is an irregularly circular opening about 8 m.m. in diameter. This establishes a communication between the pelvis and the subcapsular cavity.

More suggestive and enlightening as regards the causation of these subcapsular exudates is the history of the second case in which the rôle of traumatism was very evident.

H. T., 14 years of age, was admitted to the Har Moriah Hospital, October 25, 1913, with the history of having experienced a severe blow in the left upper abdomen and back some five years previously, followed by pains in the left loin and vomiting. At this time there was no blood in the urine, nor do his parents remember that he had any urinary trouble.

For the past five years he has had attacks similar to the above, recurring at intervals of two or three months. About six months ago he fell and struck the left side, after which a severe attack of lumbar pain followed, associated with vomiting. At this time blood appeared in the urine. Pain and vomiting were features of all the attacks.

On October 28, there was a severe attack of pain in the left lumbar region and the urine contained many pus cells and red blood cells.

On October 29, left lumbar nephrectomy was done through the usual Albarran oblique lumbar incision. A cystic tumor about the size of a small cocoanut was exposed. The walls of the cyst were liberated in the usual fashion, but the mass could not be completely freed without rupture. After the escape of about 8 ounces of bloody urinous fluid, it became apparent that the fluid represented an exudate lying between the capsule of the kidney and

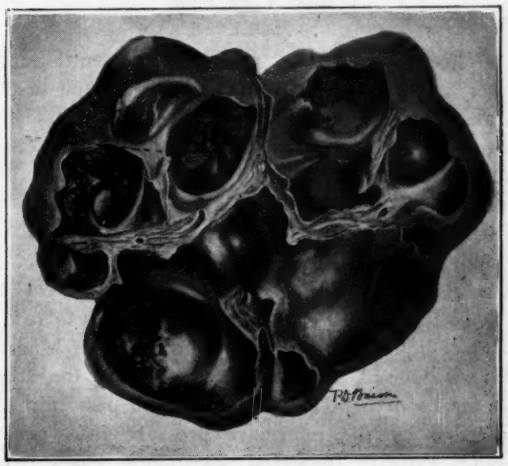

Fig. 2.

the kidney itself. The kidney was extirpated in the usual manner and the wound closed, a small tube being placed in as a drain.

The patient made an uneventful recovery; sutures were removed after a week, and after two weeks the patient was discharged with the wound closed.

We were evidently dealing here with a case of traumatic rupture of a hydronephrotic kidney with the production of a subcapsular exudate of considerable size.

Pathological examination of the kidney. The organ is about one-half again as large as a normal adult kidney (Fig. 2), presenting the typical picture of hydronephrosis of the renal type. The parenchyma is markedly attentuated, being reduced to the thickness of parchment in many places. In its thickest parts it measures no more than 5-7 m.m. Somewhat above the middle of the anterior surface

there is a rent in one of the most prominent sacculations. This hole is ragged, some 6 m.m. in length and its margins are covered with shred-like coaguli. There seems to be no doubt but that the escape of urine under the capsule had taken place through this hole. There is a number of other places where the substance of the kidney is so thin as to be distinctly translucent.

The features presented by our two cases may be briefly summarized as follows: In both instances there was a hydronephrosis with marked attentuation of the renal parenchyma; in one case a distinct history of traumatism could be elicited; and in neither case were the clinical data sufficient to arouse even a suspicion of the exact anatomical lesion.

FIVE HUNDRED CASES OF OIL-ETHER COLONIC ANESTHESIA.

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History.—The first public demonstration of ether as an anesthetic was given by Morton in the Massachusetts General Hospital in Boston, October 17, 1846. One year after this, rectal injection of fluid ether was verbally discussed by Roux before a meeting of the Académie des Sciences in Paris. This idea was actually carried out by Dupuy,[1] experimenting with dogs and rabbits. It was also mentioned in the same year (1847) by Pirogoff,[2] in St. Petersburg. His idea was to introduce liquid ether, but upon the advice of Magendie he devised a method of vaporizing the ether by means of heat and allowing it to pass into the intestine by the expansive pressure thus generated. Pirogoff reported eighty-one cases, with two deaths. Although he was very optimistic, thinking that this procedure might supplant inhalation methods, the results evidently did not warrant its continuance, as we read no more of it in the literature of the time.

In 1884, thirty-seven years after this first attempt, Molliére[3] again revived the identical procedure, which was tried and reported upon in this country by Bull,[4] Wier,[5] Wancher,[6] and Post.[7]. But because some cases were followed by marked diarrhea and melena and one death was directly traceable to the method, it was abandoned.

In 1904, Cunningham,[8] of Boston, again revived rectal anesthesia, but with the radical difference of using air as a vehicle for the ether, instead of heating it. This was followed by such good results that it was taken up by Leggett,[9] Sutton,[10] and others. Sutton reported 140 personally conducted cases, with no deaths and no untoward after-effects. He devised probably the best apparatus for administering ether in this manner. The distinctive features of his apparatus consist in having a mercurial manometer that automatically blows off at 20 mm. pressure, a generator for mixing oxygen and ether in nearly exact proportions, and tubes for conveying this mixture to and from the body.

Although very good results were obtained by Sutton in Roosevelt Hospital, under the guidance and supervision of Brewer—the operating surgeon who was also enthusiastic about the method—others did not have as good results, and the procedure again lapsed into disuse. There was no special reason for the abandonment of this ether vapor rectal anesthesia except that an extensive and somewhat complicated apparatus was required.

On August 6, 1913, I read a paper on "Oil-Ether Anesthesia" at the Seventeenth International Medical Congress in London.[11]. The first successful clinical demonstration with oil-ether was on September 27, 1913, at The People's Hospital, New York City, upon a patient of Dr. I. M. Rothenberg, Dr. S. Rothenberg operating. This work was continued at Columbus Hospital, and was successfully demonstrated at other hospitals in New York City, then in neighboring cities, and the method is now being used with success in different parts of the country.

Animal Experiments:—Between twenty and thirty animals were used in experiments, and in only one instance did we lose an animal as the direct result of the anesthetic, and this was intentional. In succeeding experiments, before the dosage was determined, several animals were rescued from the danger zone by simply washing out the rectum. Autopsies were performed at irregular intervals upon others, and no contra-indication to the method was found. Although considerably handicapped by the short and small rectum of the dog, we persisted in these experiments until we obtained a perfect anesthesia in several successive cases.

Laboratory Work:—Experimental work with animals under the direction of Professor Wallace, and the laboratory work of Professor Baskerville, to determine the time of the separation of the ether from the oil has been reported. (See Bibliography, 12 to 14.) Wm. H. Park, Director of the Bureau of Laboratories of the Department of Health of New York City, states that the colon bacillus is killed in one minute by a 75 per cent. solution of ether in olive oil, the amount used with adults. A 50 per cent. solution kills the colon bacillus in ten minutes. As infection from the

colon bacillus is to be reckoned with in many surgical operations, it may be inferred from the above that the employment of oil-ether colonic anesthesia would be an additional element of safety.

Physiology:—It must be very clearly understood that the physiology of oil-ether anesthesia is entirely different from that of ether when introduced by the respiratory route. When the oil-ether mixture is introduced into the rectum, it requires a very short time to heat the mixture from room to body temperature. When this occurs, some of the ether leaves the oil in the form of a gas. It is then absorbed by the blood circulating in the small capillaries surrounding the colon. It is carried thence through the liver by the greater circulation and on to the heart, and from there it is pumped into the lungs. By the time the anesthetic has reached the lungs it is thoroughly warmed to the body temperature. There is no irritation to the lungs, and mucus and saliva accumulations are usually absent; when these are present, the amount is so small that it is a negligible factor in the anesthesia. The ether is exhaled and some of it is reabsorbed, some of the gas, however, escaping through the air passages to the outer air. The odor of ether is perceptible on the patient's breath in three to four minutes. When this reabsorption occurs, the anesthetic is distributed throughout the circulation, as in inhalation anesthesia, and so reaches the central nervous system. It may be noted in passing that both the rectal and the intravenous methods of anesthesia prove the value of warm anesthetics.

Breathing, with this form of anesthesia is perfectly normal. If stertor commences, it indicates unnecesary deepening of the anesthesia. If cyanosis is present, it is evidence of an over-dose of the anesthetic or of an imperfect airway. The reflexes are quite active, especially the lid reflex; at the same time, a very great degree of relaxation exists throughout the whole muscular system. The pulse rate depends upon the preliminary medication. If chloretone and morphine have been given, the pulse is about normal; otherwise, it will be a little faster and very full and bounding. The face is not usually flushed, as often occurs with ether inhalation. Consciousness seems to be regained long before the sensations of pain are manifested. Chloretone and morphine probably account for some part of these phenomena.

Four factors tend to maintain automatically the depth of anesthesia: (1) The rate of evaporation of ether from the oil, which is always constant in normal individuals. If a body temperature of over 100° is present, a smaller amount of the mixture is required. (2) The distension of the colon. Sutton discovered that when the colon is fully distended not so much ether is absorbed as when it is only partially distended. (3) As the ether leaves the mixture, both the mixture and the gut are cooled off by the process. This retards both elimination and absorption. This process, however, does not affect the temperature of the patient, which remains constant. (4) The fourth factor is the difference between the absorptive power of the colon and the eleminative capacity of the lungs. But for the residual air in the lungs, it would be impossible to maintain anesthesia by this method.

That these four factors acting harmoniously produce as even a plane of anesthesia as can possibly be maintained by any other method, is demonstrated by the following data:

(1) A patient was partially anesthetized at eleven A. M. by administering four ounces of a 75 per cent. mixture, with the idea that within fifteen minutes a sufficient amount would be added to produce surgical anesthesia. Both the anesthetist and the surgeon, however, were detained upon another case, and did not arrive at the hospital until two P. M. During this entire time the patient was in the second stage of anesthesia. Upon the addition of the proper amount, surgical anesthesia was immediately attained, and an operation lasting about forty minutes was performed.

(2) Another patient was anesthetized, but with less than the amount required. Four drops of chloroform upon a mask completed the anesthesia, but it was necessary to add two to four drops of chloroform every five minutes throughout the operation, which lasted oven an hour and a half. Upon the withdrawal of the chloroform, the patient immediately resumed the second stage of anesthesia produced by the oil-ether administered before the beginning of the operation. Upon irrigating the lower bowel with cold water and siphoning off the residual oil-ether, the patient became conscious, as in a gas-oxygen narcosis. She was fully conscious when returned to bed.

(3) In many hundreds of cases surgically anesthetized by this method (in which no supplementary anesthetic was employed), the pulse, respiration, reflexes, and blood pressure all remained constant.

Safety:—The limits of safety are wider than with any other known method, as shown by the difference between the dosages for surgical narcosis and for toxemia. The fact that it requires from ten to twenty minutes for the anesthesia to fully

assert itself would also indicate that an equal time would be given if any untoward symptoms should present themselves, and this is exactly what occurs. The factor of safety may be illustrated by citing one case in which a near-fatality resulted.

The case occurred in the Harlem Hospital. The patient was a woman weighing less than one hundred pounds, who received an overdose of both the preliminary medication and the mixture. Twenty grains of chloretone and eight ounces of a 75 per cent. mixture were administered, whereas the proper dosage for such an individual is five grains of chloretone and five ounces of a 75 per cent. mixture. She received four times the required amount of preliminary medication, and two-thirds more of the mixture than was necessary. The result was a respiratory arrest of eight minutes, but upon instituting the usual restorative measures she made an uneventful recovery.

Apparatus Required:—The only apparatus required is a rectal tube one-fourth of an inch in diameter and about twenty-eight inches long—the ordinary tube being too short—a clamp for this tube, a three-inch glass funnel, and a Lockwood tube about thirty inches long and three-eighths of an inch in diameter. These should be sterilized before use.

Improvements in Technic:—The technic has been considerably improved since the first report. One to two ounces of castor oil should be administered to the patient the night preceding the operation, care being taken to avoid purging. In the morning, irrigate until the return is clear, and allow the patient to rest for two hours or more.

Preliminary Medication:—No preliminary medication is required for children under nine years of age, but in order to obtain the most satisfactory results with adults, preliminary medication is essential. My own preference is to give per rectum—one hour before the time of operation—five to twenty grains of chloretone in a suppository, or dissolved in two to four drams of ether to which an equal amount of olive oil has been added. As paraldehyde mixes perfectly with oil and ether in all proportions, it may be found that two to four drams of this fluid dissolved in an equal amount of olive oil and given alone—is preferable as a preliminary. As isopral, like chloretone, has a slight local analgesic as well as a general hypnotic effect, this drug may be superior as a preliminary to the others mentioned. One-eighth to one-quarter of a grain of morphine, with one one-hundredth of a grain of atropine should be given hypodermically fifteen minutes after the chloretone or paraldehyde has been given.

For alcoholics and athletics, the following is suggested: Two hours before operation, give one one-hundreth of a grain of hyoscin hydrobromide hypodermatically, and one hour before the operation repeat the hyoscin with one-quarter of a grain of morphine. For these subjects, Sutton gives one-sixth to one-quarter of a grain of morphine, and 1/120 to 1/100 grain of scopolamine, hypodermatically, one hour before operation. With both the preliminary medication and the mixture, the patient should be in the Sims' position. If in a ward, the bed should be screened. No unnecessary exposure of the patient should be tolerated. At least twenty minutes before the time appointed for the operation, the 75 per cent ether-oil mixture should be administered very slowly through a catheter to which is attached a funnel, the end of the catheter having been well lubricated and inserted four inches within the rectum—allowing one minute for each ounce given. The patient will become unconscious in about five minutes, but full surgical narcosis is not usually reached before ten to thirty minutes. The time of narcosis is shortened by keeping the patient perfectly quiet and not allowing him to talk.

From a large number of cases, we have deduced the rule of one ounce of a 75 per cent mixture of ether in oil for every twenty pounds of body weight. For children, a mixture containing 50 to 65 per cent of ether is sufficiently strong. Thus we see that, according to the rule stated, an adult weighing one hundred and sixty pounds will require eight ounces of a 75 per cent mixture. No more than eight ounces should ever be given, regardless of the patient's weight. If a patient is too lightly anesthetized by this amount, it is better to supplement by inhalation than to increase the amount to ten or twelve ounces. In my own practice, two patients, women weighing 240 and 250 pounds respectively, were fully and deeply anesthetized with this amount of the mixture. A wiry, athletic, alcoholic subject, weighing 150 pounds would also take about the same amount. A child four to six years of age, would probably require just a little more than the one ounce for every twenty pounds of body weight. We run no risk with children, because the rate of absorption is much more rapid than with adults, so we can always proceed slowly with the introduction of the mixture. One-half to one ounce can be added later, if necessary.

From this time on, the patient should not be left alone. In ten to thirty minutes, the patient will

be ready to be placed upon a stretcher and carried to the operating room. If cyanosis, loss of reflexes or embarrassed respiration occurs, two or three ounces of the mixture should be withdrawn, and irrigation with water should be instituted and maintained until the anesthesia is satisfactory. If the breathing is easy and regular, with the reflexes active, the patient will be found to be relaxed and in surgical narcosis. If the patient is lightly under the influence of the anesthetic at this time, a towel placed over the mouth and nose will deepen the anesthesia. The lower jaw should be manipulated as in inhalation anesthesia, in order to maintain a clear airway. A Connell breathing tube should be employed if stertor or cyanosis begins.

When the operation is completed, the two rectal tubes should be placed in position and the colon gently massaged from right to left, in order to withdraw any of the mixture that remains. The bowels should then be thoroughly irrigated by one or two gallons of cold soapy water introduced through the funnel attached to one of the tubes and allowed to pass out through the other. One of the tubes should then be withdrawn, and two to four ounces of olive oil, followed by a pint or a quart of cold water, should be injected into the colon, and the remaining tube withdrawn. The reflexes should be quite active and the patient breathing quietly as he is returned to bed. The patient usually awakens in ten to fifty minutes, quietly, without nausea, vomiting, or pain, the analgesia continuing for some time after consciousness is restored.

Value as Compared with Other Methods:—Sutton kept careful records of one hundred cases of rectal etherization in Roosevelt Hospital. A comparison with these cases is important in order to determine the status of oil-ether. Sutton's cases "ranged from two to seventy-seven years in age. The longest time of operation was two hours and twenty minutes, the average being fifty-three minutes. Eighty-seven grammes of ether per hour was the average consumption. Forty-three patients had a supplementary administration of ether or chloroform; twelve cases had eructation of gas, probably indicating the passage of air into the stomach from the distended small intestine. After the adoption of a 20 mm. maximum pressure in the bowel, only four cases in seventy-one were so affected. In eighteen cases there was slight perspiration; forty-three patients vomited after the operation, several of these having no sensation of nausea; twelve had abdominal pains; five had bloody stools or blood-streaked returns from the post-anesthetic enemata—all cleared up in the course of a few hours to three days."

Sutton's conclusions are: "(1) That the method is one of extreme safety in the absence of definite intestinal lesions; (2) the colonic method of administration of ether is more complex than the pulmonary method in general, and requires from the anesthetist a broader appreciation of the physiological factors involved. For these reasons alone, its field of usefulness is limited to cases in which it presents distinct advantages over the pulmonary method. It is, therefore, not a method adapted to the experimental use of the tyro, but, rather, a valuable addition to the armamentarium of the trained anesthetist."

It is probable that oil-ether anesthesia has been administered a greater number of times during the short period since its first introduction than has vapor rectal etherization during the entire period which has elapsed since 1904. This is not due entirely to the simple apparatus required, but also to the fact that it is much safer. This statement is proved by a comparison with Sutton's statistics. In not a single case has there been eructation of gas. This would indicate that on account of the physiological factors already mentioned the pressure is never as high as 20 mm. There is not a single instance of bloody stools or blood-streaked returns reported, in spite of the fact that the method is being so largely employed by those who have not been specially trained as anesthetists. In not a single instance of either children or adults has colitis or any other disturbance resulted from the anesthetic when the patient has been in fair condition. Not a single death has been reported as the direct result of the anesthesia.

One of the greatest advantages of this method is that it can be administered to the patients in bed, and they need not necessarily know that they are taking an anesthetic. The element of apprehension and fear that usually arises in the mind of every individual when told either to walk to the operating room or get on a carriage and be carried to the anesthetizing room, is entirely eliminated. Much needless mental suffering is thus avoided. The patients go into full surgical anesthesia without any unpleasant sensations, and usually waken in the same way. Even with athletes and alcoholics, the second stage is negligible. In an ideal case, the relaxation is perfect, and is more complete than with any other known method of anesthesia.

In spinal analgesia, the anesthetist is committed to the amount injected; whereas with oil-ether

anesthesia the anesthetic is as completely under control as with inhalation methods.

The cases of oil-ether anesthesia concerning which definite information have been received, are as follows:

	Number
New York Post-Graduate Hospital, reported by Dr. Heyd, January 12, 1914	50
New York Post-Graduate Hospital, reported by Dr. Frazier	17
People's Hospital, reported by Dr. Robinson	20
Columbus Hospital	37
Smith Infirmary, reported by Dr. Wiltsie	75
Dr. E. M. Foote	22
Dr. Meeker	14
Dr. Hubert Arrowsmith, Brooklyn Eye & Ear Hospital	50
Dr. Lombard	62
Dr. Cantle, March 20, 1914	24
Dr. J. T. Gwathmey (estimated)	140
	511

Comments of Others:—"The principal case of interest at The People's Hospital was a woman weighing about 75 pounds, with a temperature of 104 degrees, suffering from general diffuse peritonitis. This patient was held on three and a half ounces of a 75 per cent mixture for an hour and fifteen minutes. She made an uneventful recovery."

"In the fifty cases reported from the Post-Graduate Hospital, 8 were supplemented with chloroform. A trace of albumin was found in the urine about as often as when the inhalation is employed. There did not seem to be an indication to proctoscope any of the patients. In only three cases was there post-operative nausea and vomiting." Dr. Heyd's conclusion is that "where we had plenty of time to give the anesthetic properly, the results have been most satisfactory."

Not included in this list was a private case which also occurred at the Post-Graduate Hospital. The patient was a doctor's wife who had delayed having her tonsils removed for over a year, on account of very great fear of the anesthetic. This new form of anesthesia so appealed to her that she immediately decided upon an operation. The anesthetic was given to her in bed, without any complaint whatsoever, and the operation was entirely successful. However, a haemorrhoidal condition was made so much worse from the anesthetic that she had to be operated upon a few days later for this condition.

At the Smith Infirmary, a supplementary anesthetic was required in one-third of the cases. The urine was negative as to pathological findings. Those who had been operated upon previously with an inhalation anesthetic expressed a strong preference for the oil-ether method. Many patients thought they were receiving an ordinary enema, and upon awaking after the operation asked when they were to be operated upon.

Dr. E. M. Foote states: "My general impression of oil-ether rectal anesthesia is so favorable that I shall continue its use,"

Ten of Dr. Arrowsmith's cases were esophagoscopies. He reports the method as ideal for such cases.

Dr. Lombard states that in his series of cases the kidneys were less disturbed than by ordinary methods; that it is more satisfactory with children than with adults; and that it was more satisfactory with women than with men.

In two emergency cases of Dr. Meeker's (children), no preliminary preparation of any kind was given, yet the anesthesia was entirely satisfactory.

Five of Dr. Cantle's patients had taken ether before, and all agreed that this was the more comfortable method, the preliminary sensation of choking and suffocation being entirely eliminated and there being no unpleasant after-effects. All patients made good recoveries, with no complications.

Dr. John B. Murphy writes that he has used the method once. He states that the anesthesia was perfect and that he intends to make frequent use of it in his clinic hereafter.

In a private case, in my own practice—the patient being an insane woman—the mixture was placed in the hands of a nurse who gave it to the patient as she was lying on a sofa. This case also was ideal in every respect. I have the reports of several goiter cases in which no intimation of an operation was given, and the technic was carried out as outlined, with entirely satisfactory results.

My youngest case was a child two years old, satisfactorily anesthetized with a 50 per cent solution.

After-Effects:—The after-effects compare most favorably with the best methods of administering ether or chloroform. It has been given to consumptives, asthmatics, and to patients afflicted with bronchitis, and in no instance has the condition been made worse.

Indications and Contra-Indications:—It is especially indicated where the element of fear is in evidence, as in goiter cases; also with children and large athletic alcoholic men—cases in which occasionally a fatality results from fear. Large fat men and women are especially good subjects for this

form of anesthesia. Such cases given the anesthetist much trouble with any inhalation method, on account of narrowed air passages. It is especially indicated in bronchoscopy and gastroscopy, where the anesthetist would be in the way of the surgeon. It is especially indicated in all operations upon the respiratory tract, head, neck, and chest.

Contra-Indications:—It is contraindicated in any pathological condition of the lower bowel, such as colitis, haemorrhoids, fistulae, etc. When these conditions exist, they are aggravated by the introduction of oil-ether. Even when no pathological condition is known to be present, if the patient should complain very much upon its introduction, rectal anaesthesia should be discontinued. Whenever ether is contra-indicated, this method should not be employed, except in bronchitis, asthma and similar conditions as previously mentioned. If, however, the patient has been ill from a previous ether administration, this is no contra-indication to oil-ether anesthesia. Emergency cases usually contra-indicate this method.

Advantages:—1. In administering ether by this method in bed, every principle of anoci-association, as enunciated by Crile, is fulfilled.

2. Absence of apparatus of any kind enables the anesthetist to devote his entire time to the patient.

3. An even narcosis automatically maintained.

4. Quiet natural breathing, without mucous râles.

5. Reduction of post-operative vomiting, nausea, gas pains, etc., to a negligible quantity.

6. Return to consciousness in an analgesic state.

BIBLIOGRAPHY.

1. Prat. d'Anaesthesie chirurgicale. Paris, 1863, page 98.
2. Recherches pratiques et physiologiques sur l'etherization, St. Petersburg, 1847.
3. Molliére: Lyon Medicale, 1884, xlv.
4. N. Y. Med. Jour., March 3, 1884.
5. N. Y. Med. Record, 1884.
6. Cong. Internat. des sciences méd., 1884.
7. Post: Boston Med. & Surg. Jour., 1884.
8. Boston Med. & Sur. Jour., April 20, 1905; N. Y. Med. Jour., Apr. 30, 1910.
9. Am. Surg., October, 1907.
10. Am. Surg., April, 1910.
11. 17 Internat. Cong. of Medicine, London, 1913. (Subsection vii-(b), page 163).
12. N. Y. Med. Jour., Dec. 6, 1913.
13. N. Y. Med. Jour., Jan. 31, 1914.
14. N. Y. Med. Jour., March 28, 1914.

40 EAST 41ST STREET.

PENETRATING BRAIN TUMORS.

Occasionally brain growths penetrate the skull, but this occurs only in those which actually destroy the bone-tissue. In children, whose skulls have not yet hardened, a growth may enlarge the fontanelles and spread the sutures; and, in adults, very rarely a growth may cause local bulging of the bone.—A. S. HAMILTON in *The Jaurnal-Lancet.*

STRAIGHT DIRECT LARYNGOSCOPY, BRONCHOSCOPY AND ESOPHAGOSCOPY.

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(*Continued from June Number.*)

CHAPTER VI.

TRACHEO-BRONCHOSCOPY.

1. HISTORICAL.

While it is not strictly true that Killian was the first to pass a tube into the trachea, he developed the method and placed it on a working basis so that to him must be given the credit for direct tracheo-bronchoscopy. He was undoubtedly the first to invade the bronchial tubes which were "forbidden ground" to those who had been bold enough to pass tubes into the trachea. For his boldness in having opened up the bronchi to direct inspection, Killian must be given credit for one of the greatest, if not the greatest, advances in the history of laryngology. As early as 1875, Voltolini and after him Pieniazek and L. von Schroetter had inspected the trachea through tubes introduced through a tracheotomy wound. Esophagoscopists had occasionally introduced the esophagoscope into the trachea as they had found out on the withdrawal of the mandrin, but they had quickly removed the tube on discovering their mistake. Von Hacker and Rosenheim had made some observations in this region, and in 1895 Kirstein passed a straight tube through the larynx, but did not go any distance into the trachea. In 1896, Killian removed a foreign body from a bronchus through a straight tube introduced through the mouth, and in 1897 recommended the method as of practical value. Since then laryngologists throughout the world have taken up tracheo-bronchoscopy as a part of their specialty. The work, however, has never become popular to the extent that a large number of men are doing it. While many operators have reported the removal of an occasional foreign body, the more difficult cases are still referred to a few experts who have become extraordinarily skillful by long practice. In 1904, von Eicken published from Killian's clinic a series of cases which illustrated the great value of the direct methods. His article acted

as a stimulus and since the publication the number of foreign bodies removed has increased enormously. Killian described the upper and lower methods of tracheo-bronchoscopy, the former of which means the introduction of the tube through the mouth, while the latter comprehends the passage of the tube through a previous tracheotomy wound. Each of these methods has its indications and limitations which will be referred to more particularly further on.

2. General Remarks.

It may be well to preface the description of the different methods of examination by some general remarks on the appearance of the trachea and bronchi as seen through the tube. It is not necessary to dilate upon the fact that the bronchoscope must be smaller than the lumen of the trachea. When the bronchoscope enters the trachea, the part to be examined is a nearly round lumen and not a flat surface as in the larynx. One sees two inches or more beyond the end of the tube and it takes some practice to tell what is before the tube. Working in the trachea and bronchi is more difficult than laryngeal work because it is harder to judge distance. Another difficult problem for the beginner is to work successfully through the small tubes which of necessity must be used. The writer has made it a rule in his dispensary work to use the smallest possible tubes because he feels that it is good practice to introduce instruments through them and to accustom the eye to seeing through the smallest possible space. This practice makes operating through the larger tubes much easier. The ease of introducing tubes into the bronchi is accounted for by the fact that the tracheo-bronchial tree can be moved, according to Brunings, at least 10 centimeters at the bifurcation and the parts immediately adjacent to it. The trachea is moved from side to side with very little force.

3. Choice of Instruments.

Most operators seem to prefer Brunings' instruments for tracheo-bronchoscopy. They claim that they are more easily introduced; that the light never fails, as does the Jackson light when it is covered with secretion or blood; that the lumen of the tubes is larger and therefore easier to work through. That these are strong arguments no one can deny, but the writer is convinced that the advantages are more apparent than real. The largest Jackson tube measures 9 millimeters in the inside diameter, while Brunings has one of 12 millimeters. With the writer's method of introducing the bronchoscope, a Jackson tube of 12 millimeters can be easily passed between the vocal cords in many adults, but there is no necessity for a tube of this diameter. When successful work can be done with a smaller tube and one runs no risk of injuring the structures of the larynx with it, it is useless to use the larger tube. The objection to the source of light in the Jackson tube is not serious if atropine is given before the examination to dry up secretions and one has a second light carrier loaded to introduce if the first one becomes clouded or burns out. If one uses a battery and is careful to have the lights just at white heat, there is not much danger of burning out the light. The writer has tried both Jackson's and Brunings' tubes; he prefers the former because he is convinced that the light is better when one is working far down in the bronchi. The great advantage of the Jackson tube is that one has an open surface to work through, while with the Brunings' instrument the forceps must be introduced through the slot in the mirror. The question of instruments is, after all, of secondary consideration. The beginner should learn with one set of instruments and stick to them, for one can do the best work with implements that one is accustomed to.

4. Choice of Method.

In this country, following the teachings of Jackson, the lower method is being used less and less. In European countries it is better to quote Brunings, who says: "If statistics are consulted, it will be found that in Gottstein's series the upper method was followed in 37 per cent., the lower method in 37 per cent., and the two methods in 17 per cent. of all the cases, showing that upper and lower bronchoscopy were practised equally. The proportion is rather different when the numbers are taken with regard to different ages, as I have done in the following table:

Age in Years. (1)	*Lower Bronchoscopy.* (2)	*Upper Bronchoscopy.* (3)	*Upper and Lower. Bronchoscopy.* (4)
	%	%	%
0-6	47	33	20
7-12	32	53	15
13-60	24	52	24

It is seen that the frequency of tracheotomy after the age of six rapidly decreases, and after the twelfth year decreases still more. Of course, the cases in the fourth column (upper and lower bronchoscopy) are not included. These belong all nearly to the second column, because, as the upper method is impracticable, tracheotomy had to be performed. It must be remembered in the interpretation of these statistics that the cases in question were all of an operable character (foreign bodies), and that

peroral introduction of the tube was often contraindicated by the gravity of the symptoms. In many cases, also, it was only after tracheotomy had been performed that endoscopic treatment took place. Nevertheless the percentage of lower bronchoscopy seems very high with the comparison with the figures in Killian's clinic, but this no doubt is due partly to imperfect mastery of the method—which was still in its trial—and partly to an incomplete set of instruments. If the early difficulties of passing the larynx with a long and narrow tube and frontal illumination are remembered, it may confidently be expected that the lower method will be largely abandoned as the new instruments are introduced. Nevertheless, lower bronchoscopy will in future continue to be practised in the case of certain indications, for it is not only technically much easier to carry out, but, in certain cases, also guarantees greater certainty and safety in endoscopic operation. In practice three main groups of such cases have to be considered:

1. The subject may already have an opening in the trachea at the time of examination.

2. Tracheotomy may promise other than endoscopic advantages.

3. The incision of the trachea may simply serve the purpose of tracheo-bronchoscopy.

In the first case, of course, the lower method of examination will be contemplated only if the purpose is something else than to study the lumen image of the trachea in the neighborhood of the tracheal opening. In the second case it is more difficult to decide, i.e., when for other reasons (laryngeal dyspnea, etc.) the question of tracheotomy has to be considered. It is only important to remember that lower tracheo-bronchoscopy is far more easily performed than the upper method (even a beginner is sure of success), but it must also be considered that even in the case of success it is possible that subsequent tracheotomy may become necessary, and this has often to be carried out with the greatest haste while the patient is exhausted and seriously affected with dyspnea. There is also the consideration that, with the lower method, anesthesia, which is dangerous in dyspneic conditions, is avoided and the patient becomes less exhausted—a circumstance which especially deserves to be remembered when an examination has to be repeated or when endoscopic treatment has to be prolonged. These considerations lead to the third case, in which tracheotomy would simply serve the purpose of the endoscopic examination or operation. By this I do not refer to the introduction of the tube, because I presuppose sufficient skill in this matter. Even in this case tracheotomy may be clearly indicated unless, owing to severe concurrent dyspnea, an anesthetic would be necessary, or if specially difficult endoscopic operations are in question. Among these, of course, are especially difficult cases of foreign bodies, when the form and size of the foreign body makes it uncertain whether it can be passed through the larynx, or when difficulties of presentation or loosening are anticipated, or when a moving body lies in front of the trachea, or when the operation is seriously imperiled through continuous irritability or secretion. All this must especially be taken into account with children, for in their case the smallness of the parts seriously adds to the difficulty. There ought, therefore, to be no hesitation about resorting to tracheotomy when any special difficulties occur during the upper examination, or even when danger may be anticipated from cocaine or general anesthesia, as is especially the case in children, owing to the undue prolongation of the examination. For operative bronchoscopic purposes in the case of infants the lower method alone is available.

In these general rules I have presupposed the mastery of bronchoscopy, or at least the successful introduction of the tube. If the beginner fails even at this stage, tracheotomy is absolutely indicated in serious bronchoscopic cases. The operation which, with adults, will always be effected with local anesthesia involves only a minimum risk, and the dangers of breathing through the canula, and the difficulties of decanulation, are entirely avoided. It is therefore not right to endeavor at all hazards to avoid tracheotomy in favor of the more elegant upper operation, or even to force the latter in a manner not favorable to the interests of the patient. For the patient—apart from the demands on his patience and endurance—the length of time occupied by the endoscopic operation is most important. Indeed, it may be said that the dangers of bronchoscopy lie primarily in its duration, and that in cases which end fatally, if the method itself can be blamed, it is the duration of the examination which plays an important part. The reasons of this are obvious. For one thing, danger from cocaine increases rapidly with the duration of examination, because, even when introducing the tube, the maximum dose is often necessary. Further, it must be noted that physical excitement, reflexes, and direct obstructions caused greatly increased demands to be made on the heart and breathing, and that in many cases the lungs are diseased, or the respiratory center injured by prolonged dyspnea, and this renders the patient unfit

to cope for any length of time with such increased demands. If the operation is performed without an anesthetic, an excessive prolongation of the operative shock, together with the two other drawbacks, may lead to fatal collapse. When there is no danger in delay, difficult bronchoscopic operations should be distributed over several sittings than that the duration of the tube introduction should exhaust the patient. Several carefully considered examinations generally yield a better result than a single forced sitting. I call to mind the extraction, carried out by Killian and myself, of a bronchial foreign body which extended over ten sittings, some of which attained the great length of two hours. It is not possible, of course, to state a normal period or maximum period for the duration of bronchoscopic operations. As a rule the tube has to remain on its place from five to fifteen minutes. In one favorable case I was able to extract a bone from the right main bronchus in less than three minutes (counting from the moment when the tube was first introduced). Fortunately the dangers already enumerated, which are generally avoidable, are almost the only ones which are connected with bronchoscopy proper. In order to state the actual position, I give Jackson's statistics for ninety-four cases of upper and lower bronchoscopy of foreign bodies, with a mortality of 9.6 per cent. Six of these cases Jackson himself deducts because the examinations were undertaken on patients who were in such a condition that a fatal termination was to be expected. This leaves only 3.2 per cent., of which 2 per cent. occurred in children, which bears out what has been said above."

In these remarks by Brunings there are several things to which one may rightly take exception. First of all, the upper operation is more popular in this country than the lower, and in the average case is just as easy to carry out. The writer has never had occasion to perform tracheotomy for the removal of a foreign body in an adult; in children, where the difficulties are much greater, he has had to do the operation once following the removal of a watermelon seed from the trachea of a child, two years old, for edema of the glottis from pressure of the bronchoscope. Jackson points out that edema is much more apt to occur after the use of large than small tubes, and it would seem that the use of Brunings' tubes, which are larger than Jackson's, would lead oftener to tracheotomy. This is one reason why the writer prefers Jackson's tubes. The writer cannot agree with the statement that lower bronchoscopy is technically easier to carry out; the simple introduction of the instrument may be so, but it is not such a simple matter to do a tracheotomy in a little child, and these are practically the only patients who require the operation. The entire procedure is more difficult in the writer's opinion than the careful introduction of the tube between the cords. That there are conditions arising in tracheo-bronchoscopy that require tracheotomy is undoubtedly true, but the bronchoscopist should endeavor to become so skillful in introducing the tubes and in manipulating instruments through them that the indications for the operation will become less and less. If one has trained the eye to work through small tubes, one will gradually become so expert that the removal of the average foreign body will take only a few minutes, which will cause no damage to the larynx. Edema of the glottis following extraction of foreign bodies is caused either by the use of a large tube or the prolonged pressure of a small one. It behooves bronchoscopists, therefore, to work as rapidly as is consistent with safety. In the case of infants, Brunings believes that the lower method alone is available. In these cases the trachea is so short that one may occasionally be able to remove the foreign body through the direct laryngoscope by introducing the forceps between the cords; or the 5-millimeter tube may be carefully pushed between the vocal cords when the foreign body usually comes into view if it is of any size. A foreign body must be very small to enter the bronchus of an infant. In view of these facts the writer is opposed to tracheotomy in infants until a fair trial of the upper method has been instituted. The tube should never be kept in the trachea long at the time; if after a few minutes the attempt proves unsuccessful, one should try again another time. Brunings' objections to the prolongation of the examination because of possible cocaine poisoning are answered by the substitution of alypin which will allow one to work a long time. The writer has frequently kept the 9 millimeter in the trachea and bronchi for thirty minutes or longer in demonstrations without the slightest harm to the patient. He would not hesitate to keep it in longer if it should be necessary. The only discomfort is slight hoarseness, which passes off in two or three days.

It is scarcely necessary to impress upon laryngologists the importance of strict asepsis in tracheobronchoscopy. All metal instruments should be boiled, the small lamps should be sterilized in small glass tubes, and the light carriers immersed in carbolic solution. It is better to pay some attention to the mouth such as cleaning the teeth and washing out the mouth with 30 per cent. solution of alcohol

as suggested by Jackson. A tube which has been passed through the mouth should not be introduced through a tracheal wound without being freshly sterilized. In ordinary examinations only the instruments which are actually to be used need be sterilized; these include the tubes, applicators, and always the forceps and probe. It is always advisable to have forceps ready for a possible foreign body or the removal of pathological tissue. This prevents the necessity of sterilizing them after the tube is in position or a possible second examination. In the average examination under local anesthesia only one assistant besides the nurse to support the head is necessary; he prepares the applicators, handles instruments, etc. One instrument which should always be handy is a tongue depressor or mouth gag, the importance of which will be emphasized under another heading. In foreign body cases under local or general anesthesia, all instruments should be sterilized, for one never knows what instrument or how many he will need. Most writers lay special emphasis on trained assistants; Jackson and Brunings both lay great stress on this point. The writer, while not wishing to take issue with two such noted bronchoscopists, respectfully submits that trained assistants are not absolutely necessary for successful work. In his methods he has dispensed with an assistant to hold the head by keeping the head on the table during the entire examination. He requires an anesthetist when general anesthesia is used and two other assistants who may or may not have been trained in bronchoscopic work. Having worked repeatedly in hospitals, where the assistants had never seen such work, he feels that he can safely make the above statement. With the table close at hand which is possible by dispensing with the man to hold the head, one can help himself in many ways. It is better, of course, to have trained assistants in any surgical operation, but the writer contends that they are not absolutely essential to successful bronchoscopic work.

LOWER TRACHEO-BRONCHOSCOPY.

Lower tracheo-bronchoscopy can be done through high or low tracheotomies, preferably the former, because it is the more easily performed. It is, however, not difficult to open the trachea low down if one has had the proper surgical experience. The latter operation lessens the distance to the bronchi in which foreign bodies so often lodge. In the removal of foreign bodies, the tracheotomy wound is immediately used for the passage of the tube; for other purposes it is perhaps better to wait a few days after the operation before inspecting the trachea. In such case it is well to wash the neck with bichloride solution and to cleanse the wound with peroxide of hydrogen before passing the tube. The tracheoscope, measuring 8 inches, is long enough for inspecting the trachea and bronchi of most patients and the writer prefers it because it is easy to manipulate. When all is in readiness, the wound is anesthetized with 20 per cent. alypin solution; the tracheoscope is then passed from either side with the patient's head inclined to the opposite side. In some individuals the mucus membrane of the trachea is not sensitive and it is easy to push the tube further down; in others the use of alypin is necessary to quiet the cough reflex and the anesthetic applied by means of applicators passed through the tube. When the bifurcation is reached, the bronchi are easily explored by passing the tube to the right or left according as one wishes to enter the right or left bronchus. If the tube is passed from the right side of the neck and one wishes to explore the left bronchus, the tube is carried slightly to the left as it approaches the bronchus. To examine the right bronchus it is better to withdraw the tube and to introduce from the left side of the neck. In the removal of foreign bodies the tube is passed through the wound as soon as the bleeding stops. Here again it may be necessary to use a few drops of anesthetic to do away with the cough reflex. In small children the 5-millimeter tube is large enough for the removal of foreign bodies provided one has a slender forceps. The writer prefers to do lower tracheo-bronchoscopy with the patient sitting, though it can be done with the patient supine. The position will be described under the upper method since the writer uses the same supine position for all operations. It should be emphasized that the operator must never push the tube down without the guidance of the eye which should control every movement of the tube from the time the posterior wall of the trachea comes into view. At this point the tube is straightened and the descent is then easy. In all bronchoscopic examinations, gentleness in the manipulation of the tube is a *sine qua non* for, otherwise, serious damage may be done. The examination of the different walls of the trachea and bronchi can be made by gently moving the head in different directions. By passing the tube from below upward, the subglottic space can be examined provided the wound is low enough down. In low tracheoscopy the bifurcation often comes into view as soon as the tube is straightened out, and this landmark should always be kept in view because it is easy to slip by it into the right bronchus. If the bifurcation does not present when one wishes to examine the tra-

chea, it is a good rule to draw the tube up and move it from side to side until it is seen. The picture which the bronchi will present will be described under upper tracheo-bronchoscopy. The color of the mucus membrance of the trachea varies from a light to a dark pink color; adrenalin blanches the color of the membrane materially. As operators become more expert, the lower method will be used less; in the treatment of stenosis of the trachea it helps greatly in getting at the trouble, but exposes the patient to all the dangers of the tube wearer. In one case of stenosis treated by the writer, tracheotomy had to be done hurriedly to save life. The writer believes that tracheotomy is seldom justifiable in tube work. That lower tracheoscopy is easier than the high operation to the beginner goes without saying, but to the expert operator, who has introduced the tube a number of times, the high operation is not difficult. Jackson has made the remarkable statement that he prefers to do the high operation even when a tracheotomy wound is present.

(*To be continued.*)

THE RADIOGRAPHY OF GASTRIC PTOSIS.

Given a case of suspected gastroptosis, the roentgenologist first determines whether or not the typical roentgen picture of the condition exists, giving due consideration to the anatomical type of the individual. Following this, he observes the extent of ptosis, the degree of atony, and delay in the emptying time. Next, he must be assured that the position of the stomach is not due to extragastric causes, such as pressure or traction. Knowing that an apparent ptosis may exist without symptoms, he must determine whether the atony and dilatation and the other factors in retention are those truly associated with a gastroptosis, or arise from other causes, such as pyloric spasm, pyloric obstruction or duodenal stasis from traction on the mesentery through adhesions of the ileum or a ptosis of the righ half of the colon.—H. K. PANCOAST in *The Pennsylvania Medical Journal.*

A tender, painful swelling just at or below the upper, outer border of the breast, and near the edge of the pectoralis major, is usually an inflamed lymphatic gland. In its presence it is well to look for some skin infection about the waist line, e.g., furuncles, which are not rare at this site as a result of irritation by the corset. Per contra, with a boil, abscess, dermatitis or other infection at or above the waist line, one may be on the lookout for glandular enlargement at the point referred to .

SPLENECTOMY FOR SPLENIC ANEMIA—REPORT OF A CASE AND DESCRIPTION OF THE OPERATION.*

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Splenic anemia was first systematically described by Banti in 1883 although the disease had been known for some twenty years before. For years after this, isolated cases were reported, until in 1902 Osler brought the subject again into prominence. The etiology is unknown. The disease, while supposed to be very rare, is really not infrequent. Most of the cases reported have been in males. The disease occurs at all periods of life, but cases in very young children are not common. The patient (Fig. 1) here reported, is of a child but 5½ years old. In several cases reported there has been a family incidence. Banti describes the disease as having three states: first, enlargement of the spleen with anemia of a secondary type; second, enlargement of the liver; and third, the ascitic stage. The diagnosis is relatively easy if the disease is thought of. It is made on the enlargement of the spleen with a secondary anemia and without much variation from the normal of the white cells; usually the number of white cells is, if anything, decreased. The conditions which are to be differentiated are splenomegaly without anemia, splenomegaly with anemia dependent upon various infective processes such as syphilis, tuberculosis, malaria, uncinariasis, kala-azar, malignant endocarditis, septicemia, etc.; pernicious anemia, leukemia, Hodgkin's disease, splenomegaly following cirrhosis of the liver and inteference with the portal circulation.

Splenectomy has been done in these cases ever since Banti's original paper and is advocated on the hypothesis that the seat of the trouble is the disturbed metabolism of the spleen. However, this may be, it is certain that this disease not treated by splenectomy terminates eventually in death in a majority of cases; while splenectomy done in the early stage is curative. Of ninety-eight cases** of splenectomy for splenic anemia done in various stages of the disease, seventy-seven recovered and twenty-one died, a mortality percentage of 21.4 per cent. Collected statistics do not give an accurate understanding of the mortality, as fatal cases are not reported unless of special interest through the pathological findings. Statistics of individual observers are much more illuminating. Interesting in this connection is the report by Richards of twenty-

*A Clinical Lecture at the Methodist Episcopal Hospital, April 11, 1914.

**Collected statistics of Bessel-Hagen, Johnston and Deaver

two cases of splenectomy, with four deaths, for Egyptian splenomegaly, a disease which is quite similar to Banti's disease. Two of these cases were in the final stage of the disease. Excluding these two cases the statistics show a mortality of 10 per cent., while in eighteen cases of splenectomy for splenic anemia by Mayo there was a mortality of 11½ per cent. As just stated, the benefit the patient derives from splenectomy depends upon the stage in which the operation is performed. Done early the operation is curative. Of thirty cases collected by Banti, including ten of his own, four were operated upon in the first stage of the disease, of whom three were cured; twenty-two were operated upon in the second stage, of whom thirteen were cured; four were operated upon in the third stage, of whom one was cured. Of the eighteen cases operated upon by W. J. Mayo, two died as a result of the operation; twelve were well from one to seven years after the operation; two were improved; one died three years after the operation, showing improvement until shortly before death; one died two and a half years after operation, cause unknown. The final results of the cases operated upon by Richards and Aly Bey for Egyptian splenomegaly show that eighteen cases were successful in that the patients left the hospital in better condition than when they entered it. These cases were seen nine months to two and a half years after operation and were in good condition, some of them doing hard physical work.

The history of this case is as follows:

E. P., admitted January 30, 1914, aged 5½ years, male, and subsequently referred to me for operation by Dr. Raymond Clark, attending physician. Chief complaint, pain over whole abdomen. No similar cases in family; no chronic diseases. Patient was always well until last summer (1913), when he had a very mild attack of scarlet fever. Since then he has not shown the same desire to play. Soon after recovery from scarlet fever and again on January 23, 1914, had severe cramp-like pain in the abdomen. In the second attack he had a severe nose bleed. The abdominal condition was met by a dose of castor oil and hot applications to the abdomen. Next day he appeared well. There was a third attack on January 23, with severe abdominal pain which was not relieved by previous methods. Pain continued all night; the bowels did not move; no history of vomiting; appetite has been good. Physical examination at time of admission: patient appears to be in good health. Mucus membranes are pale. Eyes, ears, nose, and mouth are apparently normal. Thorax, expansion good and equal on both sides, no adventitious sounds heard. Percussion normal. Heart, normal size and position, rate rapid, no murmurs or accentuations. Later a murmur developed as a result of the profound anemia. Abdomen, liver not palpable, spleen enlarged almost to the iliac crest, no other abdominal organs palpable. On February 5, liver was palpable below costal margin. On March 21, upper border was in fourth space, lower border 5 c.m. below costal margin. Fluid found in both flanks. On April 4, lower border 7 c.m. below costal margin, vertical diameter 11 c.m. During the first twenty-seven days in the hospital the temperature held about normal. He then had a severe epistaxis bringing the pulse from 110 up to 140. After this the temperature varied from 98° to 101°, with an afternoon rise each day. Seven days later he had another epistaxis and a third five days after this. After a two-day interval he again bled, then went a week before having his fifth nasal hemorrhage. By this time the patient had developed an ascites. On the fifty-sixth day in the hospital temperature jumped to 104.4°, pulse 160, respirations 60. Four days later temperature, pulse, and respiration had returned to normal after a rigid diet on a minimum of fluids. After staying normal for six days, on the sixty-sixth day in the hospital the temperature began a daily variation, reaching 102° or 103°, and at some time during the day dropping back to normal. This type of temperature was maintained for nine days, when splenectomy was done—seventy-eight days after admission. On only one occasion have tarry stools been noticed. Blood counts show a persistent high color index with a marked anemia but no megaloblasts. Normoblasts were quite numerous from the onset. Ten separate blood examinations show an average red cell count of 2,160,000 and an average hemoglobin percentage of 56. The leucocytes have varied markedly, usually ranging around 11,000, but on one occasion reaching 36,000. The polynuclear count has been low throughout, averaging about 44 per cent., once as low as 23 per cent. Other examinations: Wasserman, negative; von Pirquet test, negative; stools negative for para-

Fig. 1. Showing outline of the spleen.

sites or ova; blood culture was sterile. Treatment has been entirely hemotinic, using Zambeletti and later sodium cacodylate and local treatment of oozing nasal mucosa with adrenalin. The bed has been outdoors practically all the time. The diet has been simple, with an eye to improving the blood with such things as oatmeal, green vegetables, etc.

COMMENTS DURING THE OPERATION.

The child now is in about as good condition as could be secured. Almost the entire success of this operation depends upon whether or not we will be able to remove this spleen without hemorrhage. In addition, artificial warmth will be applied to the patient during the course of the operation. All clothes and pads used in connection with the operation will be warm. In a case such as this in which the diagnosis is quite certain one has the choice of any incision. In adults the incision of choice would be the Auvray incision (Fig. 2), which, briefly, is as follows: The primary incision is made in the usual manner along the outer border of the left rectus muscle extending up to the costal cartilages. It is particularly indicated in difficult cases. Exploration having shown the case to be a difficult one requiring more room at the upper end of the incision, this is extended upward and posteriorly over the lower ribs at the level of the eighth interspace. The flap of the soft parts is dissected outward so as to show the eighth, ninth, and tenth ribs. This cartilaginous segment is now excised by dividing the cartilages close to their anterior extremities and freeing the segment from before backward and below upward, keeping close to the ribs during the dissection. Finally the excision is completed by separation of the segment a little anterior to the costochondral juncture. In this case we have made a skin incision as described by Auvray and have entered the peritoneal cavity in the usual manner along the outer border of the left rectus muscle. In children, however, it is not necessary to excise the lower segment of ribs, but the incision is now carried across the costal cartilages so as to allow of the introduction of a broad retractor pulling the lower part of the costal arch upward and to the left so as to expose the vault of the diaphragm. All bleeding from the wound has been stopped and wherever possible vessels have been caught before they were sectioned. A warm laparotomy pad is now introduced into the wound and all bleeding points ligated. I stand upon the patient's left, as I find it easier to do the operation from that side, except possibly the ligation of the splenic pedicle. In the splenectomies which I have performed I have not found any difficulty from standing in this position. Jonnesco advises that the operator stand at the patient's right in order that the pedicle may be better inspected. The bleeders now having been tied off, the left hand is gently inserted into the abdominal cavity on the convexity of the spleen and swept over the diaphragmatic surface. Here we find a few adhesions; there is also on the outer side an adhesion of omentum of the abdominal wall. This adhesion is not separated, as any other procedure except the splenectomy is to be deprecated. Exploration of the lower pole of the spleen does not reveal any adhesions. The lower pole is not allowed to come out of the wound and the colon, which presents at this moment, is gently pushed back with a warm laparotomy pad. A warm gauze pack one yard square is now ready; this will be introduced and packed against the diaphragm as soon as the upper pole of the spleen is separated from it. I make this separation quickly, but do not allow the spleen to snap or come out forcibly so as to make undue tension on the pedicle. Too quick or forcible removal of the spleen may rupture the delicate veins of the pedicle. The diaphragmatic pack is now introduced while the spleen is steadied by an assistant and held in such a manner as to cause the least possible tension on the pedicle itself. As the spleen comes out of the wound it can be seen that part of the fundus of the stomach and part of the transverse colon came with the pedicle. A warm laparotomy pad is placed against the fundus of the stomach. So far there has been not one drop of blood lost except a teaspoonful or so which came from the oozing of the abdominal wall.

The pedicle of the spleen requires particular and careful attention. It is composed of six to twelve branches of the splenic artery, each artery going to a different part of the spleen and not anastomosed with its neighbor. The veins accompany the arteries. A gastro-enterostomy clamp, the blades of which are protected with rubber tubing, is now passed about the pedicle of the spleen. In this case, since the pedicle is short, the clamp is placed one inch from the splenic tissue itself. We would like to get a little more room to doubly ligate the pedicle and so prevent the soiling of the wound from the escape of the blood contained in the spleen. In this case it is not possible. We must be content to place the gastro-enterostomy clamp so as to include the tail of the pancreas and part of the stomach. The clamp is now set so that there is no longer any danger of hemorrhage. The pedicle is ligated in sections, taking care that the needle carrying the ligature does not injure the vessels. The spleen is now cut away. There is some escape of blood from it. This could have been avoided had it

been practical to doubly ligate the pedicle. In placing these ligatures care was taken not to include the tail of the pancreas. Von Hersczel attributed the peculiar form of fever which sometimes follows to injury to the tail of the pancreas. In three cases of Mayo's the tail of the pancreas was included in the ligatures; this was known at the operation. No harm followed, although in one case the pancreatic duct could be seen open. Two clamps are now placed distally to the ligatures of the pedicle to prevent sudden retraction. The gastro-enterostomy clamp is loosened. It is seen that hemostasis is exact. With fine catgut the stump of the pedicle is sewed over, burying the raw surface. The gastro-enterostomy and other clamps are now removed and the stump allowed to slip back. A laparotomy pad is introduced into the wound and with the left hand in the wound retracting to the right, and a broad retractor under the ribs retracting to the left, the diaphragmatic pack is removed and the diaphragmatic vault inspected. It will be seen there is no oozing. Hemostasis is complete. Occasionally in these cases there are one or more bleeding points on the vault of the diaphragm; if so, they are secured by suturing with needle and catgut. No drainage is necessary. The laparotomy pads are now removed with the exception of the one which covers the abdominal contents and prevents their exposure to the air, and the abdominal wound is sutured in layers with a loop suture of chromic catgut; when the peritoneal cavity is almost closed the final laparotomy pad is withdrawn. The skin is sutured with silk, in this case a chain stitch being used so as to prevent oozing from the skin edges which in a patient as anemic as this one may occur. A firm abdominal binder is applied with the idea of overcoming the loss of intraabdominal pressure caused by the removal of the large spleen. This spleen has just been weighed and, even drained of its blood, weighs twenty-eight ounces. Since the normal weight of the spleen is from five to seven ounces, this organ is four to five times the normal weight.

Fig. 2. Auvray's incision.

Complications that may occur after splenectomy. Secondary hemorrhage is apt to occur if the pedicle is ligated *en masse* or if the ligature was applied while the pedicle is tense; it is due to retraction of the tissues. Neither of these conditions prevailed in the operation just completed. Of injuries to the pancreas we have spoken. Von Hersczel thinks that fever follows injuries to the pancreas on account of the setting free of the fat-splitting elements. Thrombosis of the splenic vein has occurred; the symptoms of this are shock, abdominal pain, and vomiting. Summers has reported a successful case following this complication. Gastro-intestinal hemorrhage may follow splenectomy. It is attributed by Leiblein to thrombosis of the short branches of the splenic artery.

Subsequent Note.—The case herein reported made a complete recovery, the convalescence being tedious because of the profound anemia, but it was otherwise uncomplicated, except for pains in the long bones. The red cells and proportion of hemoglobin decreased for a few days, then gradually increased. A leucocytosia (19,400 at first, gradually decreasing day by day) persisted for some days. The various types of white cells maintained approximated the normal proportion.

Chronic Backache.

If a case is traumatic in origin and if the sacro-iliac joints are normal in the roentgenogram and to the touch, it is to be assumed that the muscles, ligaments or joints of the spine or of the spine and pelvis have been sprained, and that the condition is similar to that of the sprain of any other joint. If the case is not traumatic in origin, lateral and anteroposterior balance are to be investigated, and static errors in the feet must be remembered as one cause of defective balance. The round back and the over-feminine figure seem especially prone to static backache, but the diagnosis of this type must sometimes be made in the absence of gross malposition.

In all cases in women the possibility of a pelvic cause must be borne in mind, and an inquiry into symptoms indicating pelvic disorder may lead to a conclusion that a competent cause for the backache exists there. The case must be classed as probably arthritic when it is chronic and there are marked stiffness and pain in motion, with muscular spasm and secondary lateral curvature. Referred pains in the legs and disturbances of sensation are suggestive. A fair-minded surgeon, however, must sometimes confess that he cannot classify the case with certainty.—Robert W. Lovett, in the *J. A. M. A.*

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WALTER M. BRICKNER, M.D., Editor

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METHODS OF BLOOD TRANSFUSION.

When George Crile re-introduced blood transfusion as a now safe procedure he made a monumental and probably permanent contribution to medicine. Nor was that contribution merely one of method, which would have been important enough in itself; it included also a thorough study of the effects, under various conditions, of the transfused upon the recipient's blood and the laboratory contraindications supplied by hemolysis and agglutination. He provided, too, in his monograph, and in other publications, casuistic studies that supplied a clear basis for the indications for transfusions—which have subsequently been added to but not otherwise much altered. Crile's success depended upon abandoning the old indirect method of transfusion, with its inevitable clotting, in favor of a direct method, by which, for the time of the operation, the donor's and recipient's vascular channels are made continuous or, in other words, an uninterrupted tube of bloodvessel intima was provided in which the blood might flow from one body to the other without clotting. Most simply to effect this temporary vessel anastomosis Crile devised a cannula (or, more properly, set of cannulae), suggested in its form and purpose by Payr's ring.

Crile's cannula is still widely used, although it has been much modified by various men. Notable among the modifications and mechanical improvements are Soresi's cannula and the admirable instrument of Elsberg. Carrel's suture anastomosis has also been much used in blood transfusion but, for obvious reasons, it could not compete with the cannula anastomosis as a routine.

The method of transfusion introduced by Crile and still widely employed is that of an arteriovenous anastomosis by which the donor's radial artery was sacrificed. This involves not only a rather delicate dissection but also a disfiguring scab. Vein-to-vein transfusion, now also much used, is quite as satisfactory, technically at least as simple, and certainly less mutilating. Less extensive dissection of the vessels is required when the communication is established through a paraffined glass tube, but this method has not won any general acceptance and the use of an animal tube, composed of a preserved segment of dog's carotid with cannulae at each end, proposed by Frank of New York, was not found practical.

These methods of direct transfusion all have possessed the shortcoming that the actual quantity of blood passing over from donor to recipient has been unmeasured. Libman and Ottenberg have recently described (*J. A. M. A.*, March 7, 1914. See this JOURNAL, May, 1914, p. 211) a method of determining this quantity. The factors in this computation are the body weights of donor and recipient and their varying hemoglobin percentages. This method, which its authors have found quite satisfactory, is not always applicable and affords, at best, only an estimate, not an actual measurement.

To measure the amount of blood passing over has led back to the old, abandoned indirect transfusion, eliminating the danger of clotting merely by developing the technic. Nor has the technic required presented any very novel feature. Edward Lindeman of New York has shown that blood can be safely transferred, in fluid form, from individual to individual by as simple a procedure as aspirating it from the donor's vein into a small piston syringe and injecting it therefrom into the recipient's vein. The only instruments required are two needles and a supply of well-made graduated glass and metal piston syringes. The essential factors in the success of this syringe transfusion are: speed and dexterity of operator and assistants, rinsing each syringe after using in warm saline solution, and maintaining a practically continuous flow through both needles of either blood or salt solution. This method not only provides at once exact measurement of the blood injected but also obviates the exposure and dissection of any vessels and the scar-

ring such exposure leaves. To those who would employ this admirable procedure we commend a careful reading of the technic as described by Lindeman himself, who has most employed it.

Another method of indirect transfusion has recently been recorded by W. L. Moss of Johns Hopkins University (*American Journal of Medical Sciences,* May, 1914). In his procedure clotting is prevented by defibrinating the blood. Aspirated from the donor's veins into Erlenmeyer's flasks the blood is there defibrinated by agitating with glass beads. Then poured into a large bottle, it is allowed to flow through rubber tubing and needle into the patient's vein, as in the intravenous infusion of saline solution. The optimum amount of defibrinated blood to be administered to an adult Moss puts at 500 c.c. His report deals only with the technic, but he has employed the method in 75 cases. He says that "the presence of free fibrin ferment does not seem to constitute a source of danger" and his results lead him to believe that "as much can be accomplished for the patient by indirect transfusion of defibrinated blood as by the more difficult direct transfusion of whole blood, except possibly in patients whose blood is deficient in fibrinogen."—W. M. B.

EMIL GRUENING.

The name of Emil Gruening, of New York, who died on May 30th at the age of 71, is indelibly written into the annals of American medicine. That he had made numerous and important contributions to ophthalmology established his reputation in a specialty in which he was a master clinician; that he was the first to call attention to wood alcohol as a cause of blindness was an accomplishment which, measured in terms of human life or reckoned merely as an important medical discovery, was enough to secure him in the permanent records of medicine; but greater even than these achievements, especially from a surgical standpoint, was his very early work in the introduction, and development of the mastoid operation, much of the fundamental technic of which, as it is performed today, must be credited to him. When one considers the anatomical and surgical complexities of mastoid inflammation and the obscurities that enveloped them at the time that Gruening, perhaps the first in this country, undertook mastoid surgery, his "pioneer" work will be appreciated in the full meaning of the word.

A Prussian by birth, Gruening studied medicine at the N. Y. College of Physicians and Surgeons. But he interrupted his course for several years to serve throughout the Civil War the country to which he had just immigrated. Ophthalmology and otology are no longer much associated as specialties, but Gruening continued active in both until his death. On both he made his impression; in both he achieved the honors which his accomplishments had earned.

He combined with the clinician and the scientific student the now rarer qualities of the classical scholar. He was the type of man who would have led in any field of intellectual activity to which he might have devoted himself.—W. M. B.

Surgical Suggestions

In cases of peritonitis it is desirable to employ the Fowler's position before, as well as after, operation.

Lipoma of the cord may much resemble a hydrocele. It is, however, less translucent, and rather less cystic to the feel.

Undertake no operation for abscess or other swelling about the chest without determining that it does not proceed from an intrathoracic source or being prepared to deal with such a finding.

The giant-cell sarcoma of the long bones is relatively benign and, as Bloodgood has shown, is often curable by thorough curettage properly performed.

The routine operative management of subacromial bursitis by excision, recommended in some text-books, is not to be endorsed. It is better to breakdown adhesions in the bursa, without or with excision of thickened areas, remove the semi-fluid-calcareous material beneath the bursa, stitch the tear that may be found in the tendon, and put the arm up in abduction.

Anterior weak-foot, or sinking of the transverse arch through the heads of the metatarsals, is a cause of painful feet often overlooked and mistreated by the application of the usual flat-foot arch. It is not difficult to recognize objectively; subjectively, it is characterized by pain in the toes. It is apt to be marked by plantar callus.

Surgical Sociology

Ira S. Wile, M. D., Department Editor.

UNEMPLOYMENT AND DISPENSARY SERVICE.

The problem of dispensary and hospital exploitation is frequently presented as dependent upon the inherent weakness of individuals desiring to get something for nothing. While it is undoubtedly true that a very small percentage of dispensary patients can afford to pay for the services secured, it must also be recognized that the vast majority of human beings are desirous of being self-supporting and independent of charities of all kinds.

The economic bases of dispensary service are complex. Few of them have been carefully studied; and still fewer are understood. The relation of industrial occupation to dispensary service deserves investigation. At the present time, serious thought is being given to the general problems of unemployment, the reason for its existence, the methods of its prevention, and the plans that may be devised to lessen its hardships. Minimum wage laws, decreasing the hours of labor, changing seasonal employments into all-year-round occupations, industrial reorganization, and unemployment insurance suggest lines of activity that are being followed, in order to demonstrate that public responsibility is being felt for unemployment and society is anxious to eliminate the existent burdens of this social oppression.

According to the United States Census for 1900, nearly 25 per cent of the working people of this country had been unemployed sometime during the year; 3,177,753 workers lost from one to three months' work each, representing on the basis of ten dollars a week, a wage loss of $200,000,000; 2,554,925 were unemployed from four to six months of the year with a wage loss of approximately $500,000,000; 736,286 lost work for from seven to twelve months at a loss of approximately $300,000,000.

While census statistics are not accurate, they are very suggestive approximations gathered as carefully as may be possible. The loss of one billion dollars in wages is more than a mere financial loss, it is a social loss which is thrown upon the community. Irregularity of employment is a serious problem of industrial organization and its effects are manifest in every phase of human endeavor. Vagrancy, immorality, crime, riot, disease, impoverishment, under-nourishment, discontent, anemia, neurasthenia, desertion, suicide are some of the indiscriminate results.

The relation of dispensary and hospital service to this large unemployed portion of a community is of the utmost importance. Unemployment is a monumental cause of institutionalism. The cost of unemployment cannot be determined in figures, but it is fair to assume, that a large proportion of the general expenditures for hospital and dispensary services must be accredited to the general social effects of unemployment. Times of unemployment are periods of temptation to crimes of trespass, particularly hazardous as indicated by the disability rate among the vagrant type. Vagrancy, however, must not be regarded as synonymous with unemployment. The true vagrant is generally a defective while the unemployed man is forced through economic conditions into his abnormal life. Enforced unemployment is hazardous in the extreme to himself, involving the moral deterioration of his family and its health, and encompassing tremendous social losses which are reflected in the growth of institutions. The solution of the problems of unemployment will undoubtedly be attended by a decrease in a number of hospitals and dispensaries and an increase in the development of medical activity for private physicians.

Book Reviews

Surgery; Its Principles and Practice. For Students and Practitioners. By ASTLEY PASTON COOPER ASHHURST, A.B., M.D., F.A.C.S., Instructor in Surgery in the University of Pennsylvania; Associate Surgeon to the Episcopal Hospital; Assistant Surgeon to the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases. Large octavo; 1,141 pages; seven colored plates and 1,032 illustrations. Philadelphia and New York: LEA AND FEBIGER, 1914. Cloth, $6.00, net.

It is an herculean effort to encompass the principles and practice of modern surgery within a single volume, and, if Ashhurst has not met with the full measure of success, he is in the class of many others who have made the attempt and have failed. Indeed, the reviewer knows of no altogether satisfying single volume text-book of surgery. It should be placed to Ashhurst's credit, however, that he has more nearly succeeded than most who have tried. Throughout his work one finds evident sincerity of purpose and studious application to the task. What then are the shortcomings of his book?

A picayune quality would be found in criticism directed at small, debatable points, and the reviewer wishes to avoid this quality. Frankly stated, therefore, the book, coming from the pen of a man who wrote that admirable and well-planned monograph on "Fractures of the Lower End of the Humerus" is found poorly balanced, and altogether too superficial. The serious student will find many important questions only partly answered. The practitioner, for whom the work is in part meant, will find it complete in some places, very incomplete and rather puerile in others. If Ashhurst had only adhered systematically to a plan he evidently had—a large surgical monograph—the work would have been far more successful. But the irregular infusion of the author's opinions throughout the book robs the work of the possibility of a straightforward text-book and yet does not give it the quality of a monograph. Many statements are merely made by Ashhurst which, had they been placed in a monograph, he would surely have justified by some proof. The reviewer has notes of many, of which the following may serve as examples: "I do not think much of strychnine except as tonic." (p. 44.) "Usually it is easy to differentiate clinically between sapremia and toxemia because in the former case there always is some dead and decaying tissue present where the putrefactive bacteria multiply. If this material is removed, the bacteria are removed with it, absorption ceases, and health is restored." (p. 15.) "The V. Pirquet reaction appears to indicate the existence of latent or healed tuberculosis (very rare in children) quite

as readily as an active focus; it is not regarded as so accurate as the hypodermic test for adults." (p. 81.) "Acute rheumatic arthritis, unless some efficacious serum or vaccine is secured soon, will become a surgical disease when physicians become thoroughly convinced that it is a form of pyemia." (p. 473.) In the symptoms and cause of acute appendicitis temperature, pulse, leukocytosis "are of quite secondary importance." (p. 852.) It is futile to multiply these excerpts.

In some parts of Ashhurst's book neither student nor practitioner will find sufficient information about subjects of prime importance. Thus subphrenic abscess is described in half a page; the symptoms and physical signs of brain and spinal cord tumor on a page each; symptoms and diagnosis of ectopic gestation on a half page; etc.

Thus far the book of Ashhurst has been painted a very somber hue. If the many relieving features are briefly enumerated instead of being as fully stated as the adverse criticism, the reason should be sought in the lack of room in these columns. The author's style is generally clear, concise and well-couched. His chapters on hernia, and on the other parts of abdominal surgery, as well as that on fractures, are splendid; student, practitioner and surgeon will be well repaid by a careful perusal of these sections. A consistent effort is everywhere made to bring the subjects up to date. Although there is no novelty in he method of treating the subject matter employed by Ashhurst, he follows the well approved groupings of chapters and sections in a very rational way. The illustrations are a very unusual feature—largely original and intelligently selected. The publishers have done their share in making the book attractive and wieldy.

La Stase Intestinale Chronique. Par Dr. E. Sorrel, Ancien Inerne, Lauréat des Hopitaux de Paris et de l'Hopital Maritime de Berck-sur-mer; aide d'Anatomie des Hopitaux. Octavo; 252 pages; 28 illustrations and and radiograph reproductions. Paris: G. Steinheil, 1914.

This monograph, appears at a time most opportune for such a publication, and it cannot fail to serve a very valuable purpose. It is clearly the object of the author, without pushing his opinions to the foreground, to collect the data that have appeared during the last half decade, on the subject of intestinal stasis and to systematize them.

The literature is voluminous, in many languages, widely dispersed. Impartially, Sorrel has collected it all and presents it to the reader, seriatim, clearly and succinctly.

The anatomy and physiology of the large intestine are considered; also its pathology. The ideas of Wilms, Lane, Stierlin, Klose, de Quervain are brought together, elucidated and compared. The views on such subjects as "mobile cecum," "typhlatonie," "Lane's kink," "habitual torsion of the cecum," "pericolitis," "Jackson membrane," etc., are shown in their truest light, and a comparative valuation is attempted.

The chapter on symptomatology is minutely and carefully written. That on treatment is probably the most valuable one in the monograph. The surgical treatment is considered in detail; the results are carefully collated and the operative procedures rationally criticized.

Throughout the book there is a distinct tendency to do full justice to Lane and his followers.

The language is simple French, easily understood and translatable. Sketches and radiograph reproductions illuminate the text.

The monograph is highly to be commended as probably the only one that has yet appeared attempting to do justice to the contending views on this complicated subject.

The Principles of Pathologic Histology. By Frank B. Mallory. Associate Professor of Pathology, Harvard Medical School. Pathologist to the Boston City Hospital. Octavo; 677 pages; 497 figures containing 683 illustrations, 124 in colors, and all but two original printed directly in the text. Philadelphia and London: W. B. Saunders Company, 1914.

The purpose of this book is more than an attempt to separate the histological description of lesions from the gross. The author appreciates fully that the leading aim of the pathologist is not the mere ability to diagnosticate a given lesion under the microscope, but the biological interpretation of the lesion from its very inception. In this respect the work before us possesses a distinct individuality. The author attempts to trace lesions back to their original sources, describing the various cellular conflicts that bring about the various pathological processes. He shows how important it is to possess all stages of a given lesion, and how necessary it is for their interpretation to have tissues well fixed and stained by various methods in order to bring out the ultimate histological details. The book is divided into two parts. In the first, entitled General Pathologic Histology, the basic changes of tissues are discussed. In this part the author has put forth his best labors, and the exposition of the finer processes of inflammation, retrograde changes, he changes induced by bacteria and parasites, and tumors is set forth in masterly fashion. The second part, dealing with the special Histologic Pathology of organs appears rather hastily written, is full of lacunæ and is decidedly less satisfactory. In the preface, Mallory indeed admits that the book is at present a mere framework for subsequent addition, so that criticism on the inadequacy of certain portions of the text is to a certain extent disarmed.

The text reviews entirely the personal experiences and views of the author, references to the literature being entirely omitted. Certain pathologic criteria which the author has introduced for the study of lesions, for instance, collagen fibrils, assume an important place. The text is written didatically and ably and the illustrations are without exception superb.

Radium and Radiotherapy. By William S. Newcomet, M.D., Professor of Roentgenology and Radiology, Temple University, Medical Department; Physician to the American Oncologic Hospital; Fellow of the College of Physicians, Philadelphia. Small octavo; 315 pages. Illustrated. Philadelphia and New York: Lea and Febiger, 1914.

The scientific and medicinal properties of radium, thorium, and of the other less known radioactive elements are presented in a clear and easily understood fashion in this book of 315 pages. There has been a pressing need for a work of this type in the English language, a source for authoritative information in a form comprehensible to those "not up on the subject" and Newcomet has well met the demand. The considerable space devoted to the chemistry and physics of the radioactive elements is very welcome, for the properties as well as the physiological and therapeutic results of these elements should be thoroughly understood. Naturally enthusiastic about the effects of radioacivity on neoplasms, the author nevertheless balances his remarks by fair and conservative statistics. In short, his book can be recommended to all beginners in the field.

Diseases of the Heart. By John Cowan, D.Sc., M.D., F.R., F.P.S. Professor of Medicine, Anderson's College Medical School; Physician, Royal Infirmary; Lecturer in Clinical Medicine in the University, Glasgow; Examiner in Medicine, Royal Army Medical College. With chapters on the Electro-Cardiograph, by W. T. Ritchie, M.D., F.R.C.P., and the ocular manifestations in arteriosclerosis, by Arthur J. Ballantyne, M.D., F.R.F.P.S. Octavo; 438 pages. Philadelphia and New York: Lea and Febiger, 1914. Price, $4.00.

This volume represents an effort to bring up to date, for the practitioner, the recent advances in cardiac research and knowledge. The subjects of diagnosis, prognosis and treatment of heart diseases are reviewed with particular reference to the studies of the last decade.

This well-printed volume accomplishes the object of the author. It is well written, logically arranged; the language, even when discussing such complicated subjects as electro-cardiography and sphygmography, is clear and the argument is easily followed.

The chapters on the pathology of the myocardium, and of the arteries are complete, and careful studies.

Those on abnormalities of cardiac rhythm, nodal rhythm, auricular fibrillation, flutter, etc., portray in interesting form these newer studies. The tracings are good throughout, well marked, and well described, as well as numerous. Illustrations are frequent and distinct.

Acute endocarditis is briefly described; it cannot be said that the author does justice to the subject of subacute endocarditis of the bacterial type.

The discussion of chronic valvular disease, while not presenting any new viewpoints, is amply descriptive and complete. The text-book style is discarded, and case histories are introduced liberally; this adds interest to the reading of the text. The case histories, however, are entirely too complete and occupy altogether too much space.

There are few criticisms to be brought against the book. Literary references are scant. The work is the reflection of the author and of his views throughout.

The subject of treatment is not complete; the particular favorite prescriptions of the author being again and again reiterated, nor is anything added to the subject of digitalis therapy out of the large experience of the writer. The subject of orthodiagraphy is conspicuous by its absence.

The book will serve a valuable purpose in presenting in interesting form the newer ideas on cardiac pathology, physiology and symptomatology.

A Handbook for the Post-Mortem Room. By ALEXANDER G. GIBSON, D.M. (Oxford), F.R.C.D. (London), University Demonstrator in Pathology, Oxford, and Honorary Assistant Pathologist to the Radcliffe Infirmary, Oxford. Duodecimo; 140 pages. London: HENRY FROWDE, Oxford University Press; HODDER and STOUGHTON, 1914.

The author limits himself entirely to the proper technical performance of post-mortem examinations. The necessary instruments are described and their use indicated. The correct procedures of examination of the external surface of the body and of each individual organ are described in detail. The work ends with advice on the conduct of certain special autopsies, such as cases of drowning, medico-legal cases, etc. We have found no points for criticism, and the book can be cordially recommended for the purpose for which it is intended.

Man's Redemption of Man. A lay sermon, McEwan Hall, Edinburgh, Sunday, July 2, 1910. By SIR WM. OSLER. Duodecimo; 63 pages. New York: PAUL B. HOEBER, 1913.

In this thoroughly delightful and characteristic essay, Osler sets forth the benefits of some of the epochal discoveries in medicine—anesthesia, antisepsis, bacteriology and immunity. As an interpreter of medicine for the lay mind, Osler has few equals, and this essay is in his best vein.

A Way of Life. An address to Yale Students, Sunday Evening, April 20, 1913. By SIR WM. OSLER. Duodecimo; 62 pages. New York: PAUL B. HOEBER, 1914.

The theme of this essay is the importance of doing well the day's work without any thought of the morrow. In the exposition of this idea, Osler brings to bear all his familiar charm of style, wealth of quotation and appositeness of illustration.

The Road to a Healthy Old Age. By THOMAS BODLEY SCOTT. Duodecimo; 104 pages. New York: PAUL B. HOEBER, 1914. Price, $1.00.

This little volume contains four chapters which deal with the subject of arteriosclerosis and its management. The author offers many helpful suggestions, especially as regards drug therapy, and presents his subject matter in a very readable and interesting style.

Books Received.

Operative Surgery for Students and Practitioners. By JOHN J. MCGRATH, M.D., Clinical Professor of Surgery, Fordham University; Professor of Operative Surgery, New York Post-Graduate Medical School, etc. *Fourth edition.* Octavo; 838 pages; 364 illustrations. Philadelphia: F. A. DAVIS Co., 1913. Price $6.00.

Progress in Surgery

A Résumé of Recent Literature.

Latent Mastoiditis. WILLIAM MITHOEFER, Cincinnati, *The Lancet-Clinic,* May 9, 1914.

The author cites several cases in which inflammation of the mastoid cells existed after apparent termination of the acute inflammation of the middle ear. The drum membrane may be intact; there may or may not be a mild degree of deafness; the handle of the malleus may be ill-defined or there may be very slight bulging of the upper posterior quadrant of the drum membrane. In other cases the drum may be absolutely normal in appearance. Mastoiditis in such cases may be very easily overlooked, even when the suppuration in the cells is already far advanced. The cessation of the discharge does, therefore, not signify a cessation of the inflammatory process, for the latter may be dormant for months or years in the mastoid cells. The factors at work in the production of latent mastoiditis are, the anatomical character of the mastoid cells, the shape and position of the antrum, the variety of the infecting organism and the resistance of the patient. The indications for operation are: Pain on pressure over the mastoid with a history of a former discharging ear, with a normal tympanic membrane and a positive X-ray plate. Painful mastoid with history of a former discharging ear, the tympanic membrane showing hyperemia or slight bulging of the upper posterior quadrant with positive X-ray plate. The presence of streptococcus mucosus in the exudate, with or without pain on pressure over the mastoid. Intra cranial complications having their probable origin from the mastoid cavity.

Treatment of Severe Hemorrhages Complicating Pregnancy. (*Behandlung Bedrohlicher Blutungen in der Schwangerschaft.*) P. JUNG, *Goettingen Deutsche Medizinische Wochenschrift,* April 30, 1914.

In cases of abortion complicated by active bleeding, the uterus should be explored at the earliest opportunity, even though all the products of conception are thought to have been passed. The old-fashoined curettage is entirely out of place in this exploration—it is dangerous and ineffectual. The only instrument to be used is the finger. If the cervix is open, the technic is very simple. There are two dissenting viewpoints as to the procedure when the cervix is contracted. The one is to gradually dilate, the other is to dilate at one sitting. The author favors the latter especially when fever already exists. The uterus should be explored in all septic abortions if there is any retention of ovular elements or if there is considerable bleeding.

Hemorrhage from carcinoma or myoma complicating pregnancy is not very infrequently encountered. The latter tumor generally exists in the form of a pedicled cervical polyp. This should be tied off, especial care being devoted to the stump because there is a tendency to secondary hemorrhage. If the cervical myoma is sessile, bleeding will not stop, in the great majority of the cases, until it is shelled out. The operative procedures need not result in abortion if the uterus is not roughly manipulated. Vaginal tamponade must first be practiced for bleeding from a cancer complicating pregnancy. Further procedures depend upon the operability of the tumor. If operable, there should be no delay in performing hysterectomy. Excochleation and cauterization are indicated for inoperable tumors, and, at the termination of pregnancy, the cesarian operation.

Varices of the genitals occasionally rupture and bleed furiously during pregnancy. If possible, the vessel should be transfixed by a ligature. This cannot be regularly done for the varices at the clitoris and labia, so that manual compression must often be practiced. If this does not control the bleeding, the entire bundle of veins must be surrounded by ligatures. Bleeding varices in the vagina should also be controlled by ligature, whenever possible, for vaginal tamponade may readily result in abortion.

The Value of the Abderhalden Reaction in the Diagnosis of Pregnancy. (*Ueber die Verwertbarkeit der Abderhaldenschen Reaktion in der Diagnose der Schwangerschaft.*) ERWIN SCHIFF, *Münschener Medizinischer Wochenschrift*, April 7, 1914.

Schiff employed the Abderhalden test against the serum from positively gravid women, and from women who were known to have various gynecological lesions the extent and nature of which were determined by operation. The conditions embraced tumors of the uterus, benign and malignant, inflammations of the uterus and of the adnexa, and tumors of the ovary. There was besides a number of cases of extra-uterine pregnancy and several cases of incomplete abortion. In the instance of pregnancy the Abderhalden reaction was strongly positive; in the other instances the reaction was either negative or mildly positive. Schiff concludes that certain ferments circulating in the blood of the gravid woman are intended to split placental tissue and these ferments are specific. These ferments react only to placental tissue and are to be found exclusively in the blood of the pregnant woman.

Further Experiences With the Posterior Cervical Cesarian Section. (*Weitere Erfahrungen mit der Sectio Caesaria Cervicalis Posterior.*) O. POLANO, *Münchener Medizinischer Wochenschrift*, April 14, 1914.

Seven more cases are added to the author's report of two years ago of his method of posteror cervical Cesarian section. The favorable results justify the further employment of this method of Cesarian section and the author goes so far as to recommend it in all emergencies where delivery must be through the abdominal route. The advantages claimed are the avoidance of post-operative abdominal-uterine adhesions, the more efficient cleansing of the Douglas sac in case of infection and, if necessary, easy pelvic drainage. The uterine muscles as such is also preserved intact rendering puerperal involution more complete. The method can also be carried out when the external as is only partially dilated.

Kontralnesin (Richter) as an Abortive Measure in Syphilis. (*Kontralnesin, in der Abortivbehandlung der Syphilis.*) E. KLAUSNER, *Münchener Medizinischer Wochenschrift*, April 14, 1914.

Klausner used Kontralnesin, a preparation recommended by Richter consisting of salicyl, sozojodol, quinin, sublimate, arsenic and phosphorus in combination with an important proportion of colloidal, molecular mercury in a series of twenty cases of syphilis during the initial stage. In fifteen cases he also added salvarsan to the Kontralnesin. The number of injections was from five to eight at five-day intervals. Of the twenty cases only five went on to the progressive manifestations of syphilis. The combination of this preparation with salvarsan gave the best results. But Kontralnesin is valuable in all stages of syphilis and can promptly cause the Wasserman reaction to disappear. It is claimed to be harmless for the kidneys and its injection is not attended by pain or disagreeable symptoms.

Concerning Disturbed Ovarian Function Associating Myomata of the Uterus and Certain Debatable Questions Concerning Myomata. (*Ueber Störungen der Eierstocksfunktionen bei Uterusmyomen und Ueber Einige Strittige Myomfragen.*) AUGUST MAYER and ERICK SCHNEIDER, *Münchener Medizinischer Wochenschrift*, May 12, 1914.

The Abderhalden test was applied to patients known to suffer from uterine myomata in order to prove disturbed ovarion function. The authors found that out of twenty-seven cases tested against ovarion "ferment," the majority proved positive. The ovary removed at operation was employed in this test. Only 50 per cent. of cases showed a positive reaction when the ovary of other patients with myoma was used in the test. The Abderhalden test is thus drawn upon to demonstrate ovarian dysfunction in relation to myomata. Function and growth of the uterus are both dependent upon the ovary. Before puberty myomata are uncommon; and in those cases of early myoma growth the onset of puberty may be assumed to be precocious as well. On the other hand after the climacteria period myomata recede in growth and even disappears. Furthermore, anatomically there are distinct macroscopic and microscopic changes in the ovary associated with the majority of uterine myomata. Hence dysfunktion of the ovary so often found in these uterine growths may not be regarded as accidental merely, but should be considered as a cause of myoma growth.

The Value of Radiography in the Surgery of the Urinary Tract. D. N. EISENDRATH, Chicago. *The Journal of the Michigan State Medical Society*, May, 1914.

The various conditions which can give rise to a shadow to be distinguished from one due to a calculus of the kidney or ureter are best divided into (a) Extrarenal shadows: (1) Calcified area due to tuberculosis of the kidney. (2) Areas of chronic induration of the kidney. (3) Atheromatous patches in the renal artery. (4) Calcified retroperitoneal glands. (5) Areas of ossification in the tips of the transverse processes of the lumbar vertebrae, or in the last costal cartilages or of the last two ribs. (6) Gallstones, pancreatic calculi or calcified areas in a cancer of the head of the pancreas or enteroliths in the appendix. (7) Calcification of ulcerations in the walls of the ureter. (b) Extraureteral shadows: (1) Calcified retroperitoneal or mesenteric glands. (2) Enteroliths in the intestine or appendix. (3) Calcification in the sacrosciatic ligaments, in uterine myomata, ovarian dermoid cysts, in the prostate or vasa deferentia. (4) Phleboliths in pelvic veins or areas of calcification in the iliac vessels. (5) Calcification in the wall of the ureter.

The author believes that there is no great danger in pyelography provided one ascertains by a preliminary injection with methylene blue solution exactly what the capacity of the renal pelvis is. The collargol should be injected by using gravity as the only pressure.

The shadowgraph catheter is of great use and should be more often employed.

Gastro-Enterostomy; Experimental and Clinical. F. A. C. SCRIMGER; E. W. ARCHIBALD; A. H. PIRIE; Montreal, *The Canadian Medical Association Journal*, April, 1914.

A consideration of a number of human cases of gastro-enterostomy and a number of operations on dogs and cats has led the authors to the following conclusions:

1. That the anastomosis in the cardiac portion, with the pylorus open, will, as has been observed by others, allow most of the food to go by the pylorus. It will afford no protection to an ulcer in that situation. More than this, in dogs at least, most of the food leaving by the pylorus re-enters the stomach through the anastomosis, and the animals will not do well; they vomit and grow thin.

2. That the addition of the exclusion of the pylorus will protect an ulcer, but will not greatly improve things otherwise. The stomach will still fail to empty. The animals will vomit and grow thin.

3. That the placing of the stoma in the pyloric portion improves matters enormously. Here food will pass out by the stoma chiefly, though partly also by the pylorus if open. If an ulcer is present, it can be efficiently protected by excluding the pylorus. In both cases the animals do well.

4. That if an ulcer is found proximal to the pylorus anywhere in the pyloric portion, it can still be protected by laying a fascial ligature around the stomach between it and the anastomosis; further, that in animals at least an anastomosis placed in relatively the same position as that necessarily used in the human, if a short-loop operation is done, is much more efficient when the fascial ligature is applied immediately distal to the stoma, than when placed at the pylorus.

Circumscribed Cerebral Serous Meningitis. LIONEL E. C. NORBURY, London. *The Universal Medical Record*, March, 1914.

Localized serous meningitis, giving rise to a clinical picture resembling tumor, was first described as occurring

in the spinal cord. A few cases of the affection localized in the cerebellum have been reported, but only four cases of a cerebral localization have hitherto found their way into the literature. The author's case, which is described in detail, is therefore of considerable interest: A child aged thirteen months had an attack of convulsions followed by right facial weakness and tremor of the right hand. Two months previously the child had a slight discharge from the right ear and a small abscess in the neck had been opened. Examination showed a tremor of the entire right side, right facial paresis and convergent strabismus. The condition not showing any improvement, it was decided to trephine over the left Rolandic area. At operation there was no sign of extradural hemorrhage or of pus. The pia-arachnoid was swollen and edematous and brain pulsations were but feebly transmitted. On account of a sudden laceration of a blood-vessel and a sharp hemorrhage, the condition of the patient necessitated a rapid closure of the wound. The wound healed by primary union, and by the ninth day there was no longer any sign of tremor. Two ounces of clear cerebrospinal fluid were evacuated by a small incision in the scar. Three times after this the same procedure was gone through. The child's condition improved steadily so that a year and a half after the operation he was normal in every way and there was no protrusion at the site of operation.

Cecopery by Fixation of the Cecum to the Psoas Parvus. (*Technique Operatoire de la Caecopexie [Fixation du Caecum au Tendon du Petit Psoas]*). P. DUVAL, Paris. *Revue de Chirurgie,* May 10, 1914.

Several methods have been employed for the fixation of a mobile cecum. The chief ones are: 1. Fixation to a peritoneal pocket in the lateral iliac region. 2. Attachment to the posterior parithal peritoneum. 3. Fixation to the peritoneum in the parieto-iliac angle. There is a considerable proportion of failures following all these methods. Duval, therefore, determined to fix the cecum to a firm and comparatively immobile structure and has had perfect results in a number of cases by employing the following technique: A large McBurney exposure is made, the musculature being incised as well as divided when necessary. After removal of the appendix the ileocecal junction is elevated and the posterior peritoneum underlying it is longitudinally incised. The psoas parvus is thereby exposed. When this muscle is absent, the inner border of the psoas magnus is employed. Several sutures are passed, taking broad grasps of the under surface of the cecum on the one hand and the musculature on the other. The only structure to be borne in mind in the dissection is the iliac artery. After the sutures are tied the two flaps of posterior peritoneum are sutured to the lateral aspects of the cecum. If cecoplication is thought necessary, this is done before cecofixation is practiced.

Results of Radium in Cancer. H. H. JANEWAY, New York, *Journal American Medical Association,* May 30, 1914.

H. H. Janeway, New York (*Journal A. M. A.,* May 30, 1914), reviews the results of treatment of cancer by radium, noting the work of Wickham, of Paris, which seems to indicate that while the influence of radium on all types of cancer is a favorable one, it does not extend to the limits of the disease in any but the most superficial forms. Wickham's works cover 1,000 cancer cases thus treated. The work of the Radium Institute of London covers 460 cases of cancer during 1912, none of which are reported as cures, though some of them may later prove to be such. Out of 101 cases of slow growing benign forms of skin cancer, 31 patients were apparently cured for the time and 41 improved. But in cancer of the rest of the body there were only 15 apparently cured. The results also confirm the observations of Wickham. The less extensive test of radium in cancer at Vienna led to the same general conclusions. While Wickham's reports show some enthusiasm, the German reports are very conservative and the London Radium Institute is non-committal. All, however, show a remarkable agreement as regards results. While radium will destroy cancer tissue in a dosage not affecting normal tissues, it does not cure the disease unless the cancer is quite superficial or of a very susceptible type. We may cherish a hope that greater success may be had in the future, but at present radium can only supplement the knife.

Can the Gamma-Ray of Radium be Produced Artificially in the X-Ray Tube? (*Lässt sich die γ-Strahlen des Radiums Künstlich in Rontgenröhren Herstellen?*) FRIEDRICH DESSAUER, *Münchener Medizinischer Wochenschrift,* May 5, 1914.

Dessauer claims that through the recent perfection of the X-ray machines we have come in possession of the agency of an artificially produced gamma-ray which has from ten to fifteen times the power of penetration of similar rays produced in the ordinary machines; and that for practical therapeutic purposes this gamma-ray is almost identical with the gamma-ray of radium. It has the decided advantage of accessibility owing to its greater cheapness and also in its universal applicability.

Multiple Subcutaneous Tuberculosis Following Circumcision and Treated by Tuberculin S. T. CHAMPTALOUP, New Zealand, *British Medical Journal,* April 11, 1914.

Shortly after circumcision done in the seventh week, the child developed many subcutaneous abscesses which did not heal after incision. Both iliac glands also had suppurated. Examination of the pus showed tubercle bacilli. When the child came under observation, ten months later, emaciation was profound. The entire body was the seat of numerous superficial abscess and scars, and the child appeared hectic. Promptly after the administration of tuberculin, the wounds healed, the child improved, and at present is in perfect health. It developed later that the physician who performed the circumcision was suffering from laryngeal tuberculosis.

Hyperneurotisation, Muscular Neurotisation, Free Muscle Transplantation. Experimental Studies. (*Hyperneurotization; Muskuläre Neuratization; freie Muskeltransplantation.*) P. ERLACHER, Gray, *Zentralblatt für Chirurgie,* April 11, 1914.

Erlacher reports a series of animal experiments which suggest many practical possibilities. The motor nerve of the biceps was divided and transplanted into another site. The functional result was perfect. The ulnar or median nerve was divided and the end was transplanted into the biceps. At the end of a few weeks electrical reactions showed that regeneration was complete. Erlacher also performed a long series of experiments in which portions of muscle were transplanted into other muscles. In some instances the transplantation was free; in others the transplantation was through a pedicle. The transplants were inserted both in normal and in artificially paralyzed muscle. In every instance the transplanted muscle healed in situ and retained its function. The application of these principles to the cure or alleviation of various forms of paralysis is obvious.

Experiences With Spinal Anesthesia in Pelvic Surgery. B. M. ANSPACH, Philadelphia. *American Journal of Obstetrics,* May, 1914.

From an experience in seventy-two cases, Anspach concludes that even in expert hands, spinal anesthesia will have a higher mortality as a routine than ether, chloroform or nitrous oxide, although it has no post-operative mortality or morbidity in which respect it is superior to the ether, chloroform or infiltration anæsthesia, but is not superior to nitrous oxide and oxygen in this respect. It is more troublesome to the surgeon than the inhalation anæsthetics. It should be used only after the surgeon has familiarized himself with all the details of the technic; he should also be cognizant of possible complications and how to meet them instantly. Well given, it is the best form of anæsthesia in selected cases, and should be resumed for those operations in which the dangers of general anæsthesia are increased or in which local anæsthesia or nitrous oxide and oxygen are unsuitable or satisfactory.